

APPENDIX 5

Spectra Relevant to Chapter 5:

Synthesis, Structural Analysis, and Gas-Phase Studies

of 2-Quinuclidonium Tetrafluoroborate

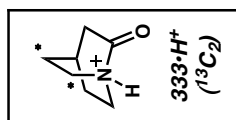
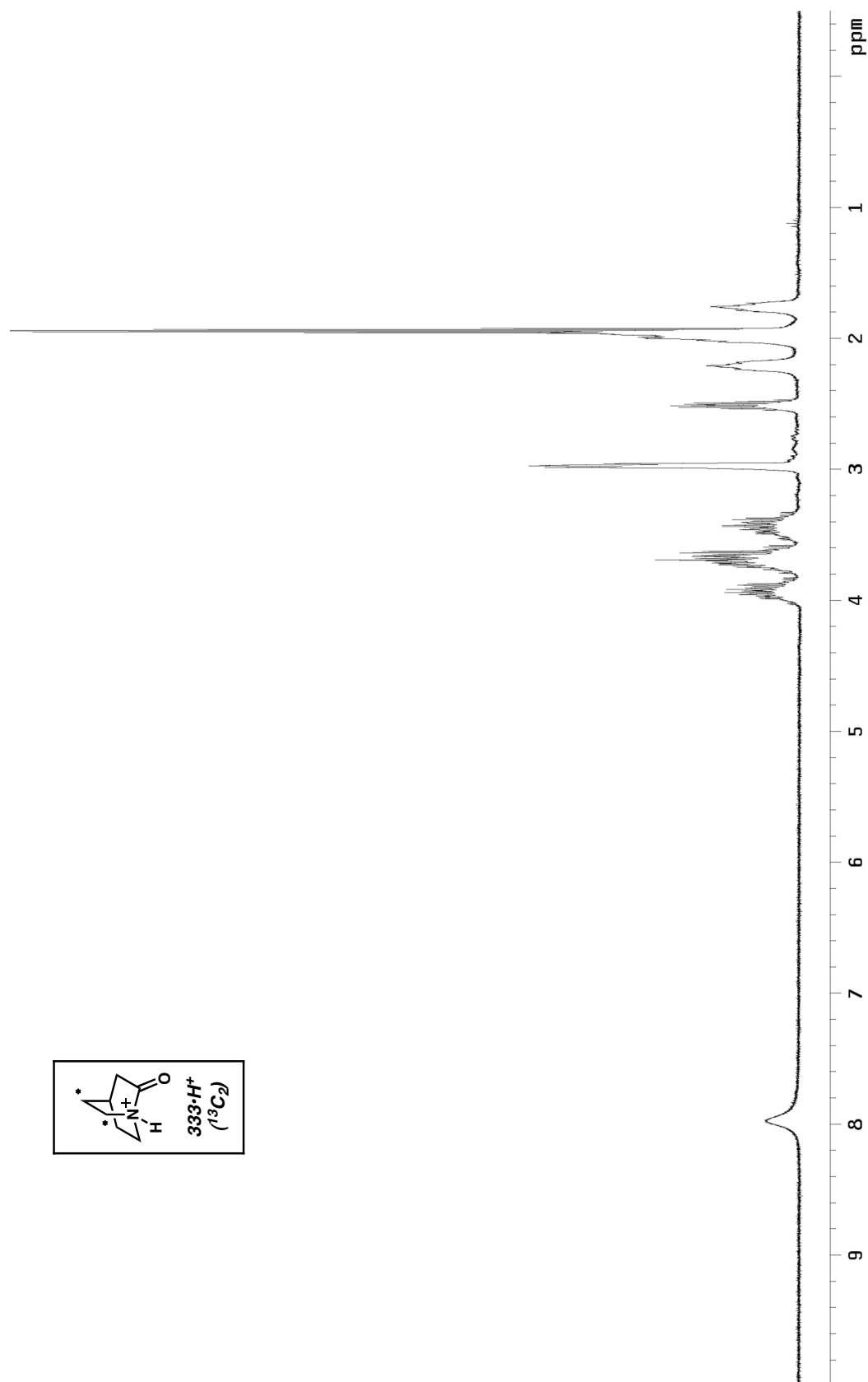


Figure A5.1. ^1H NMR spectrum (300 MHz, CD_3CN) of 333• HBF_4 .

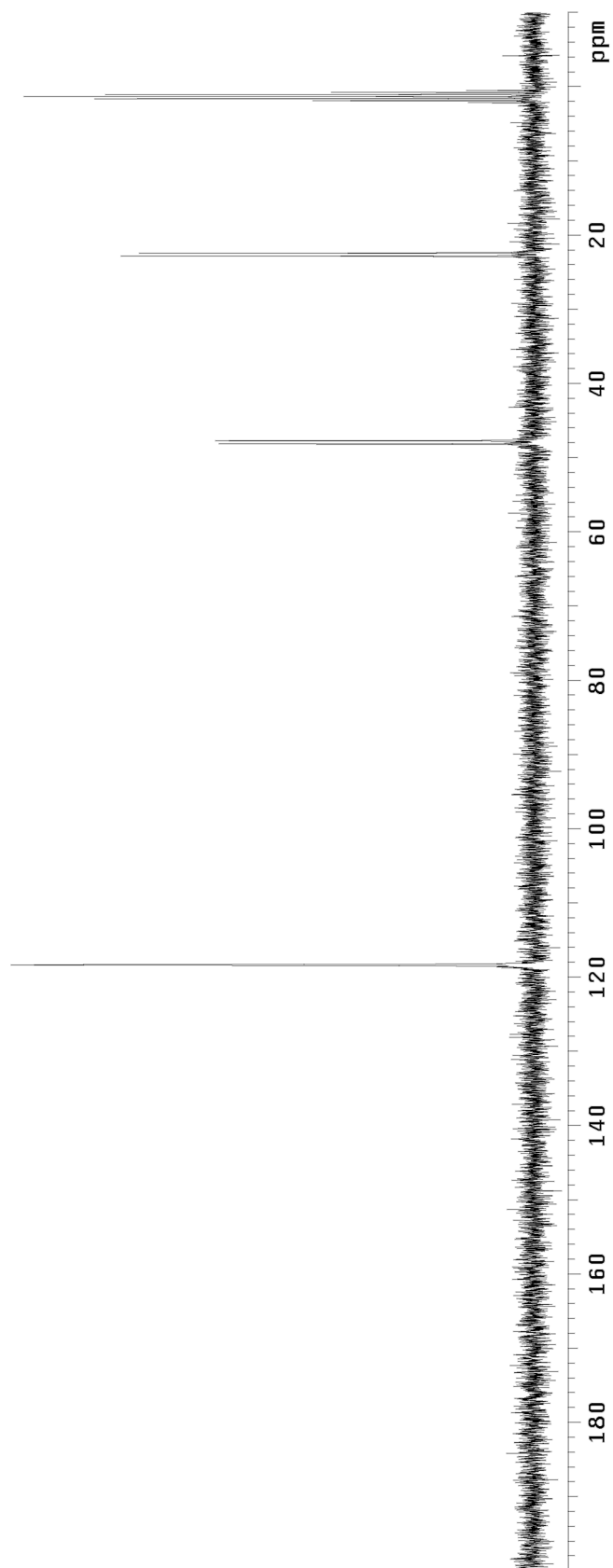


Figure A5.2. ^{13}C NMR spectrum (75 MHz, CD_3CN) of $333\bullet\text{HBF}_4$.

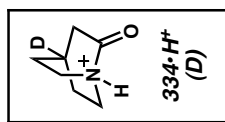
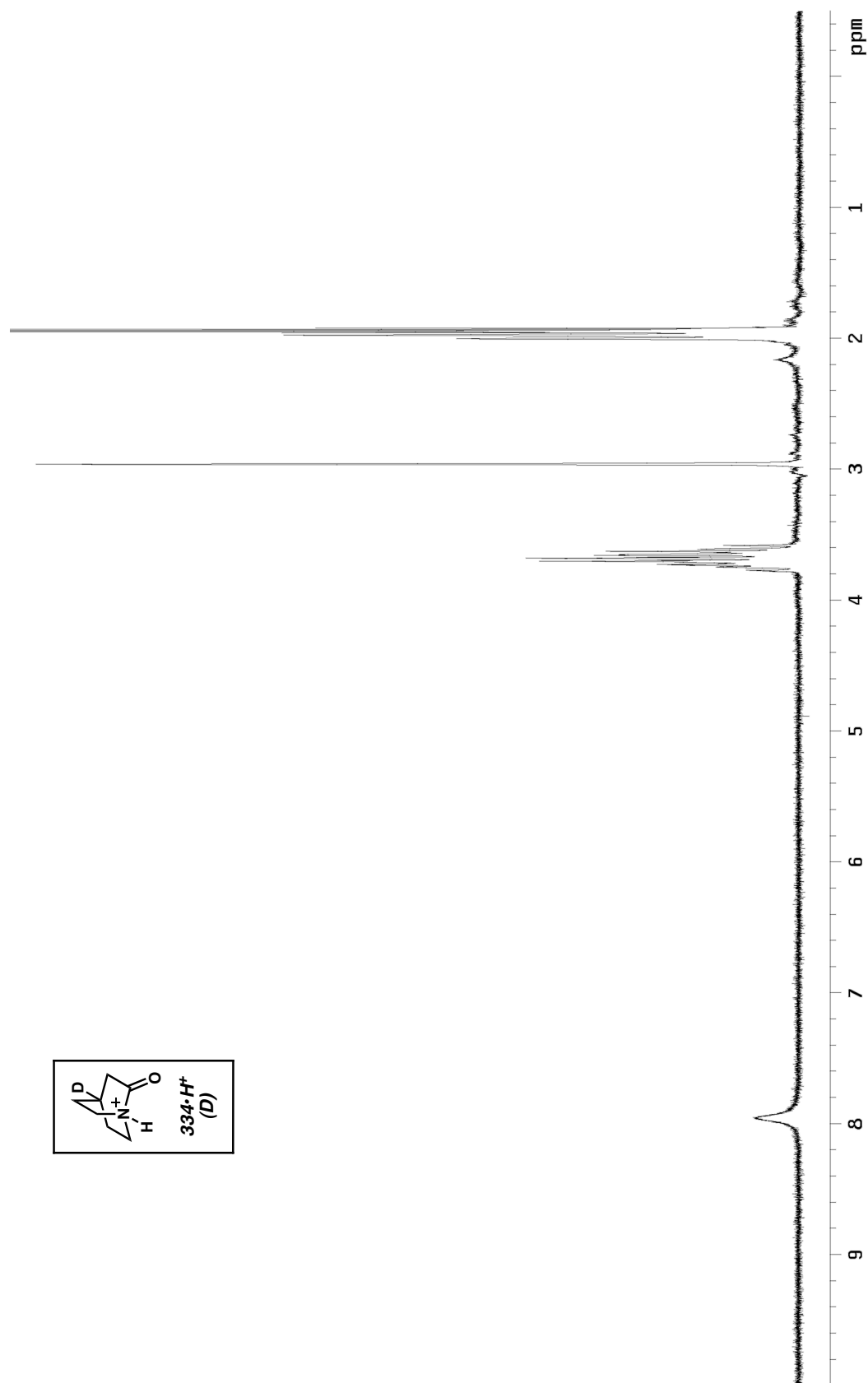


Figure A5.3. ^1H NMR spectrum (300 MHz, CD_3CN) of $334\cdot\text{HBF}_4$.

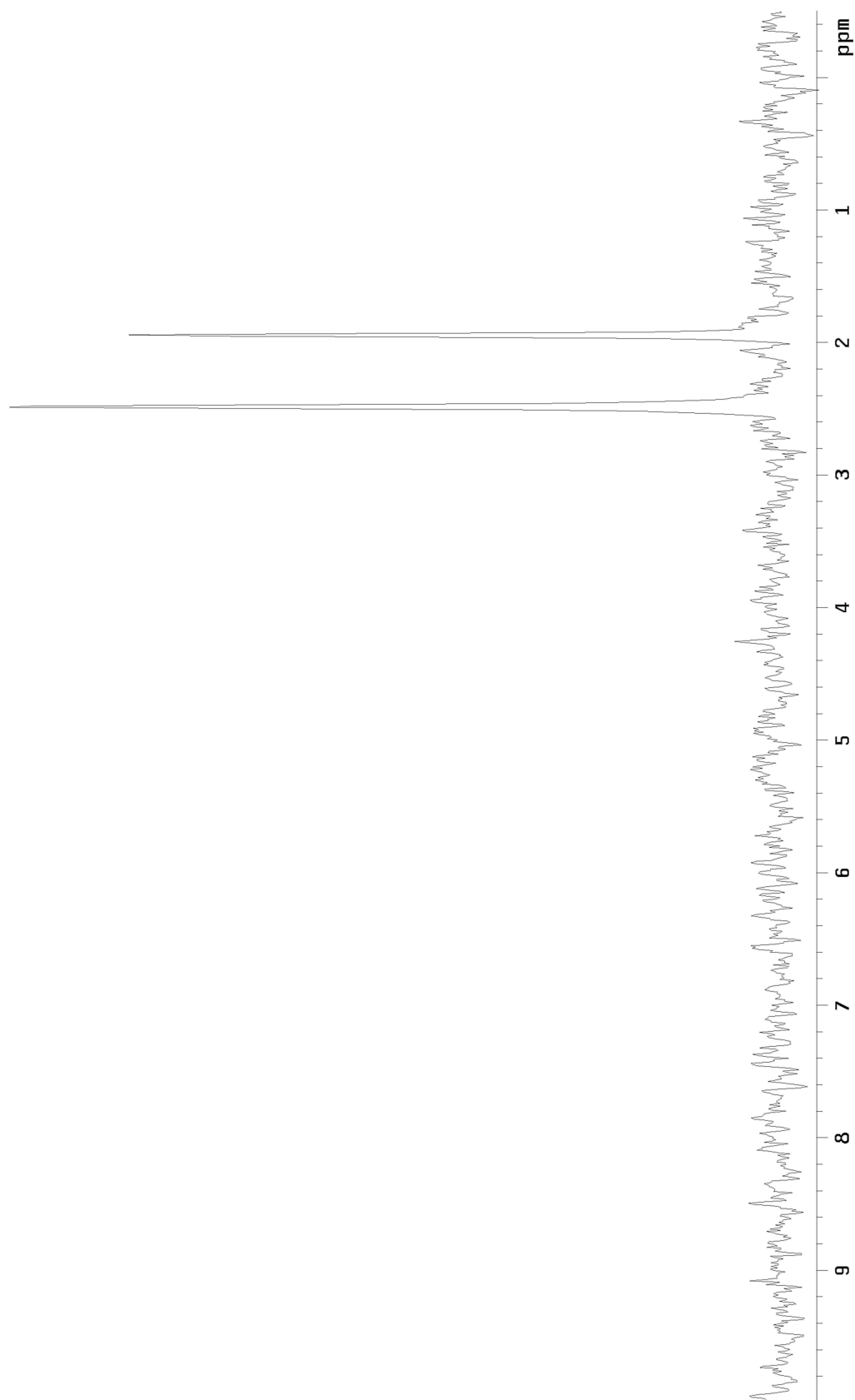
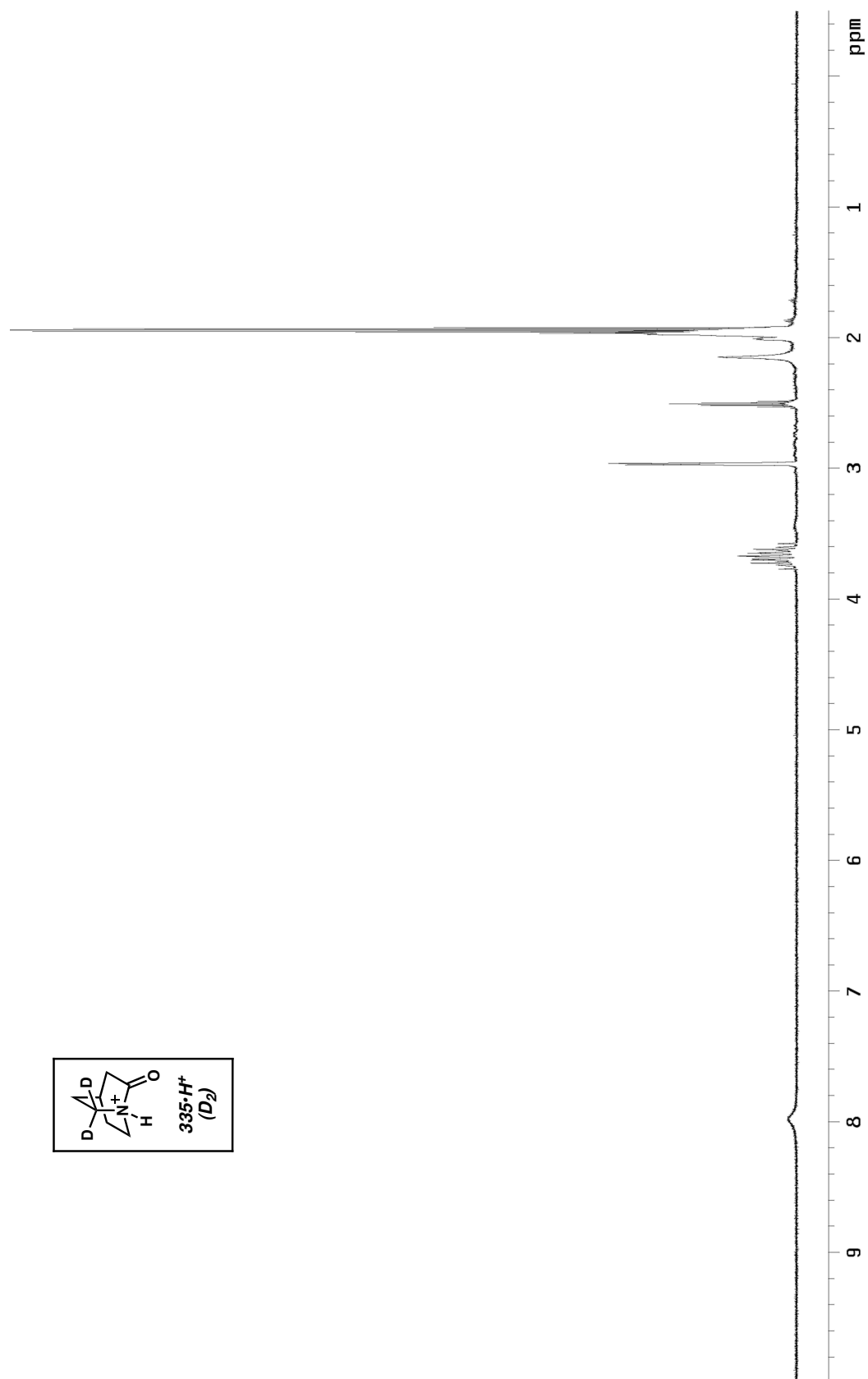


Figure A5.4. ^2H NMR spectrum (76 MHz, CH_3CN) of **334**• HBF_4 .

Figure A5.5. ^1H NMR spectrum (300 MHz, CD_3CN) of $335\bullet\text{HBF}_4$.

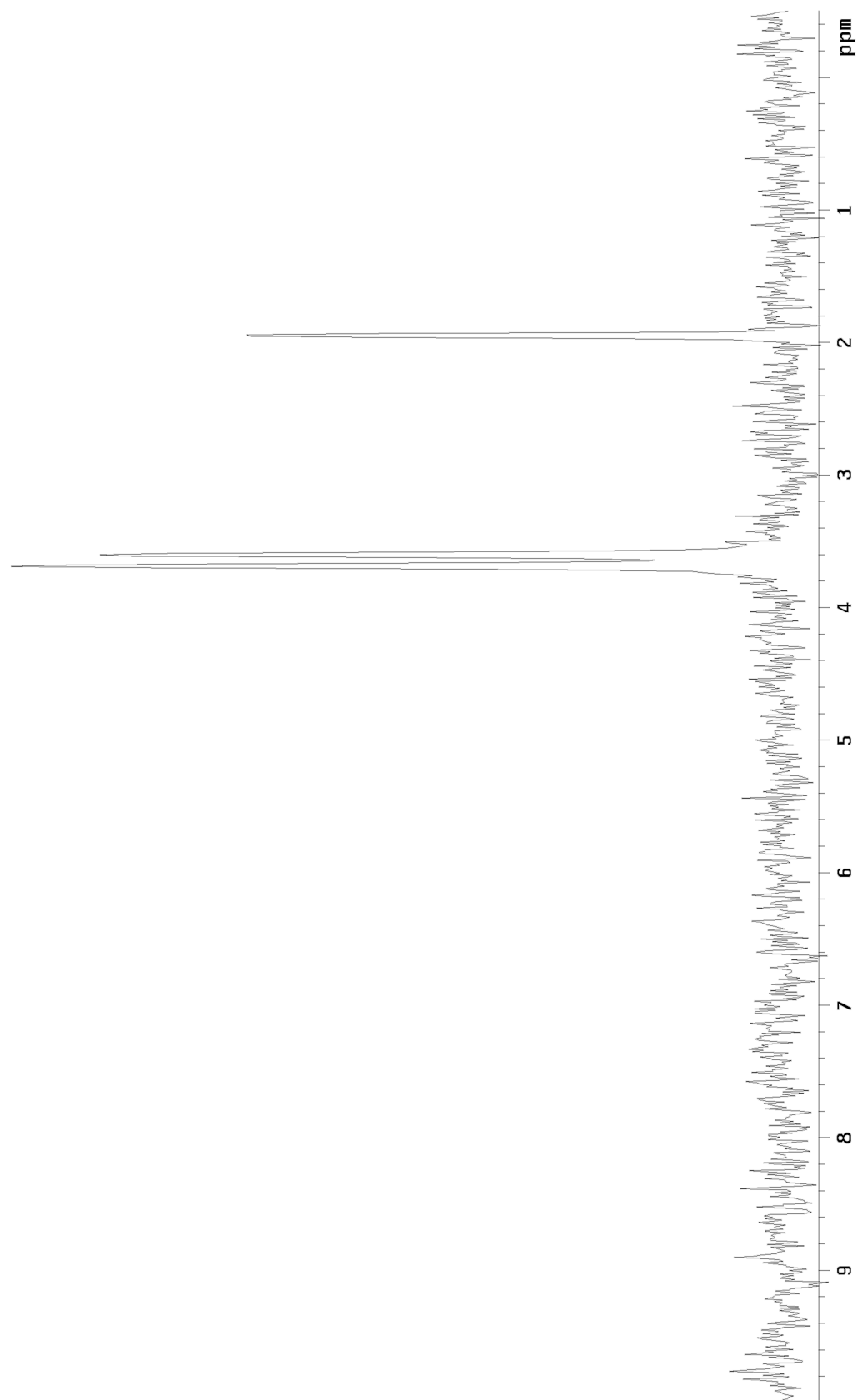
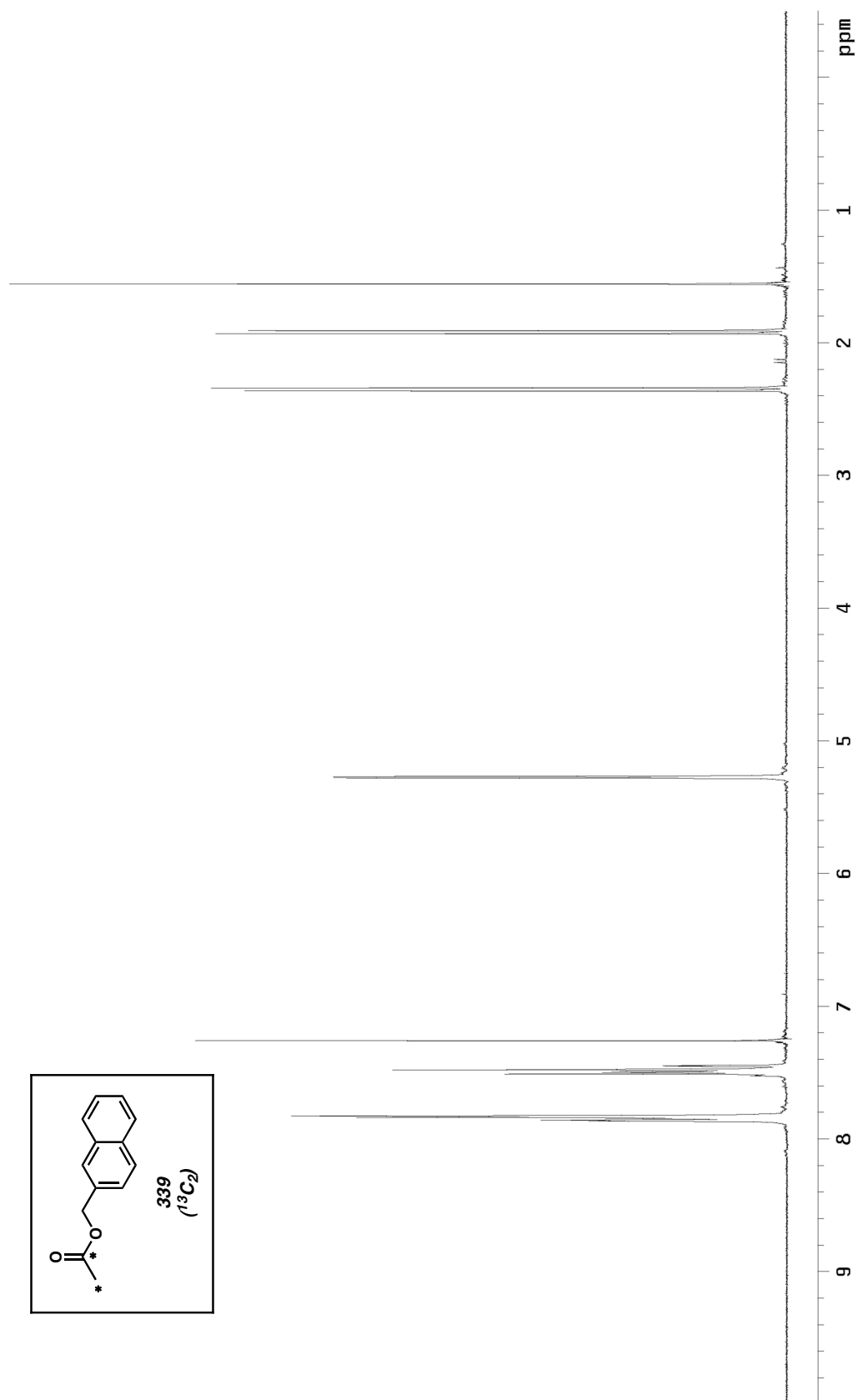


Figure A5.6. ^2H NMR spectrum (75 MHz, CH_3CN) of $335\bullet\text{HBF}_4$.

Figure A5.7. ^1H NMR spectrum (300 MHz, CDCl_3) of 339.

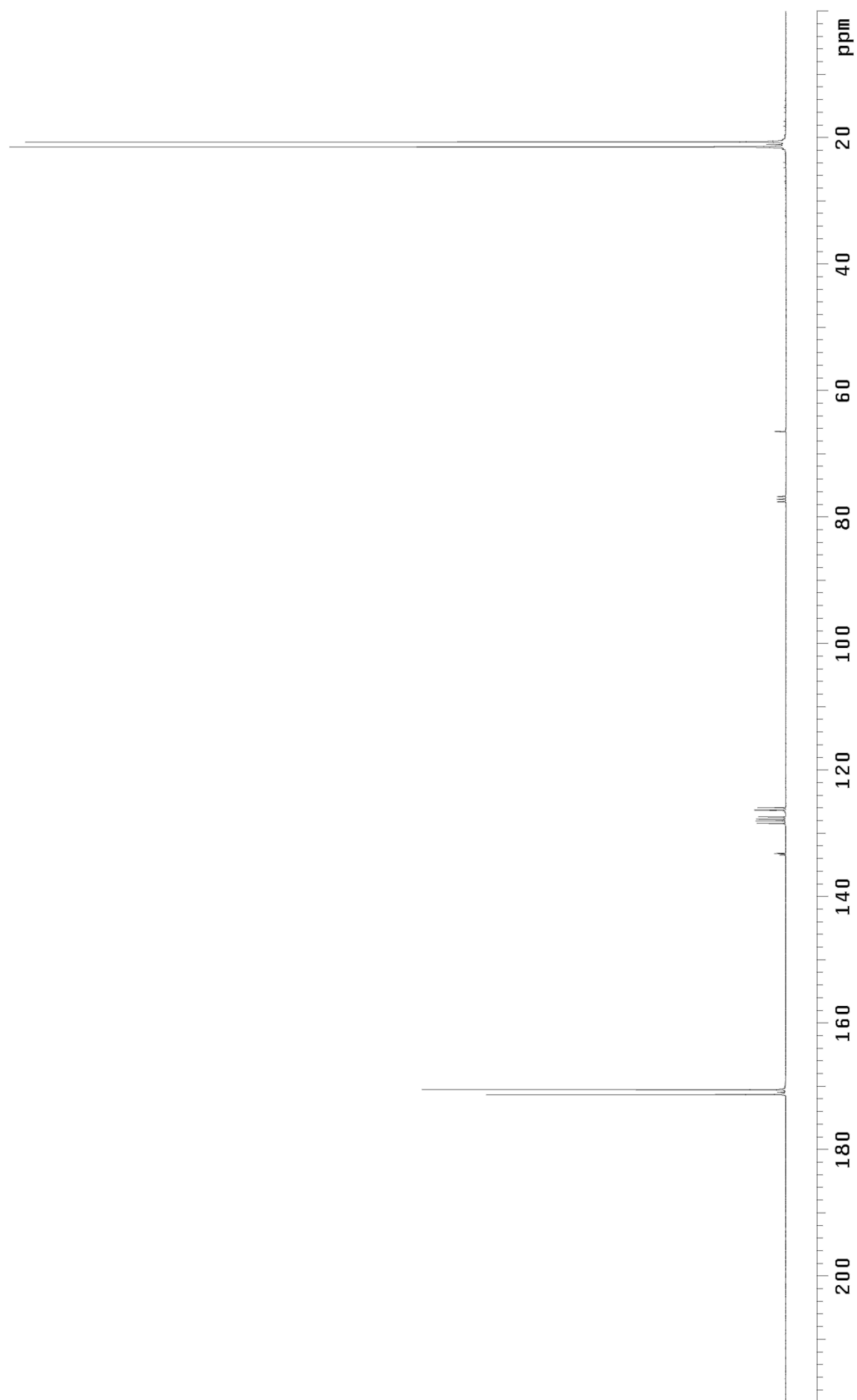
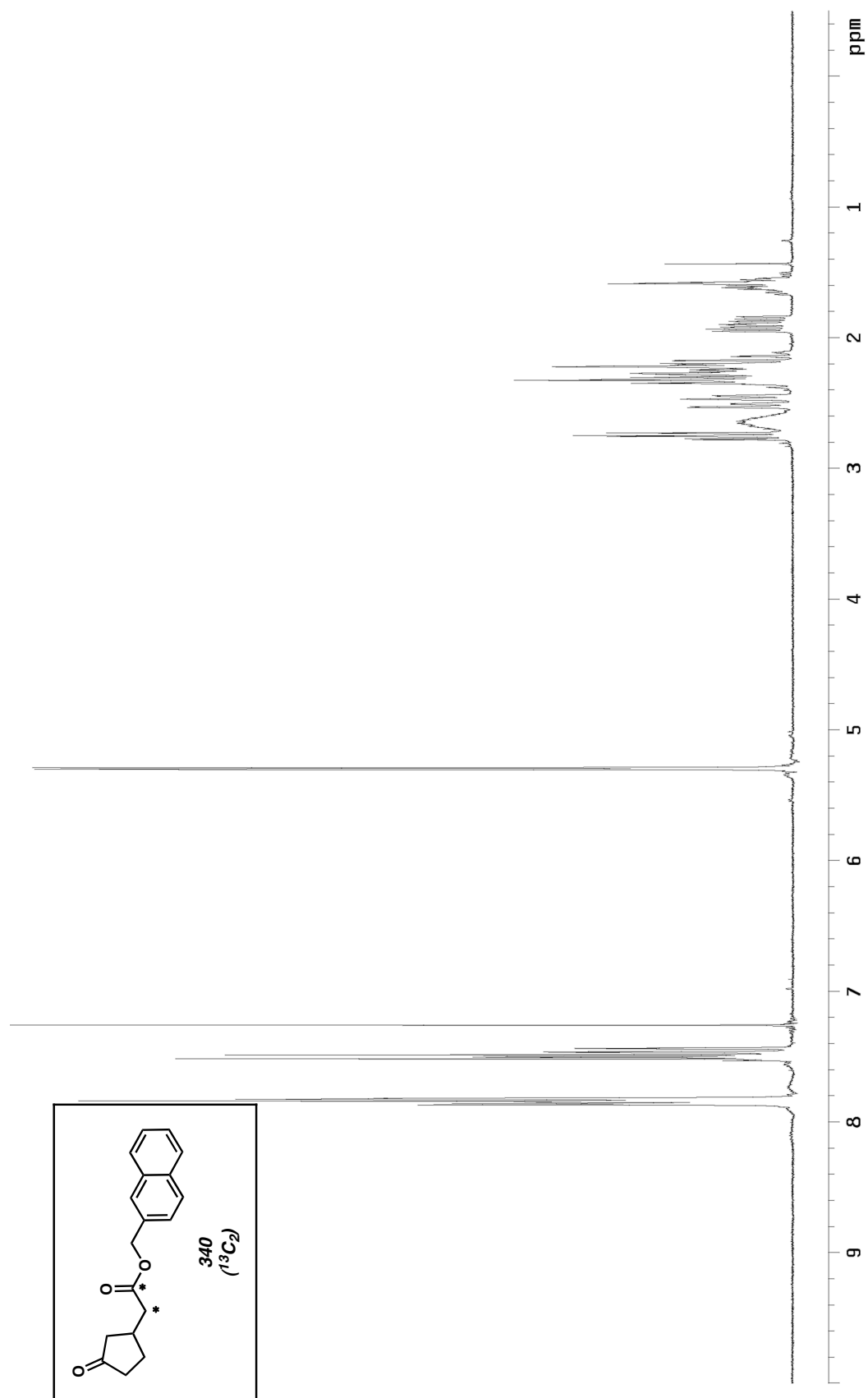


Figure A5.8. ^{13}C NMR spectrum (75 MHz, CDCl_3) of **339**.

Figure A5.9. ^1H NMR spectrum (300 MHz, CDCl_3) of **340**.

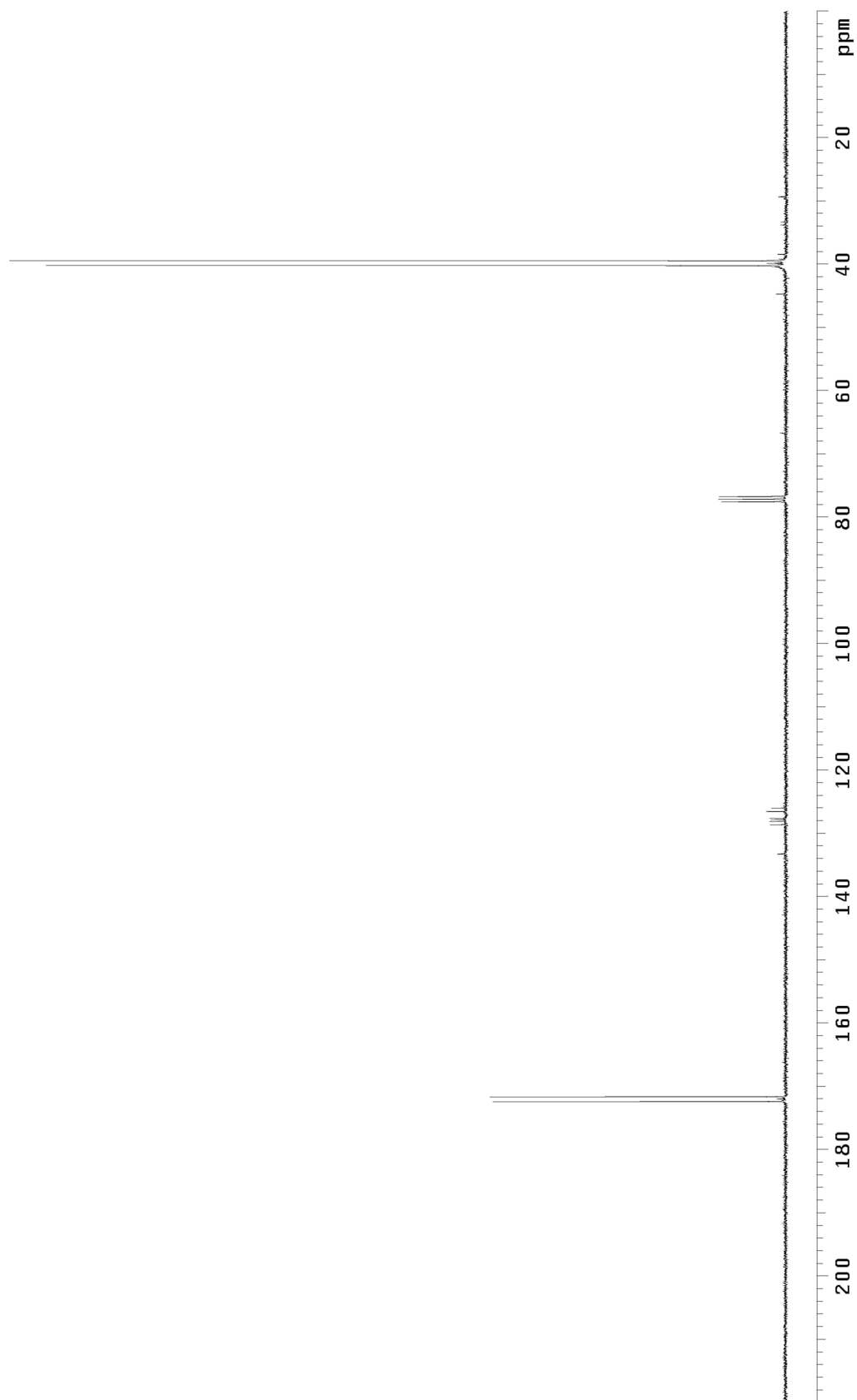


Figure A5.10. ^{13}C NMR spectrum (75 MHz, CDCl_3) of **340**.

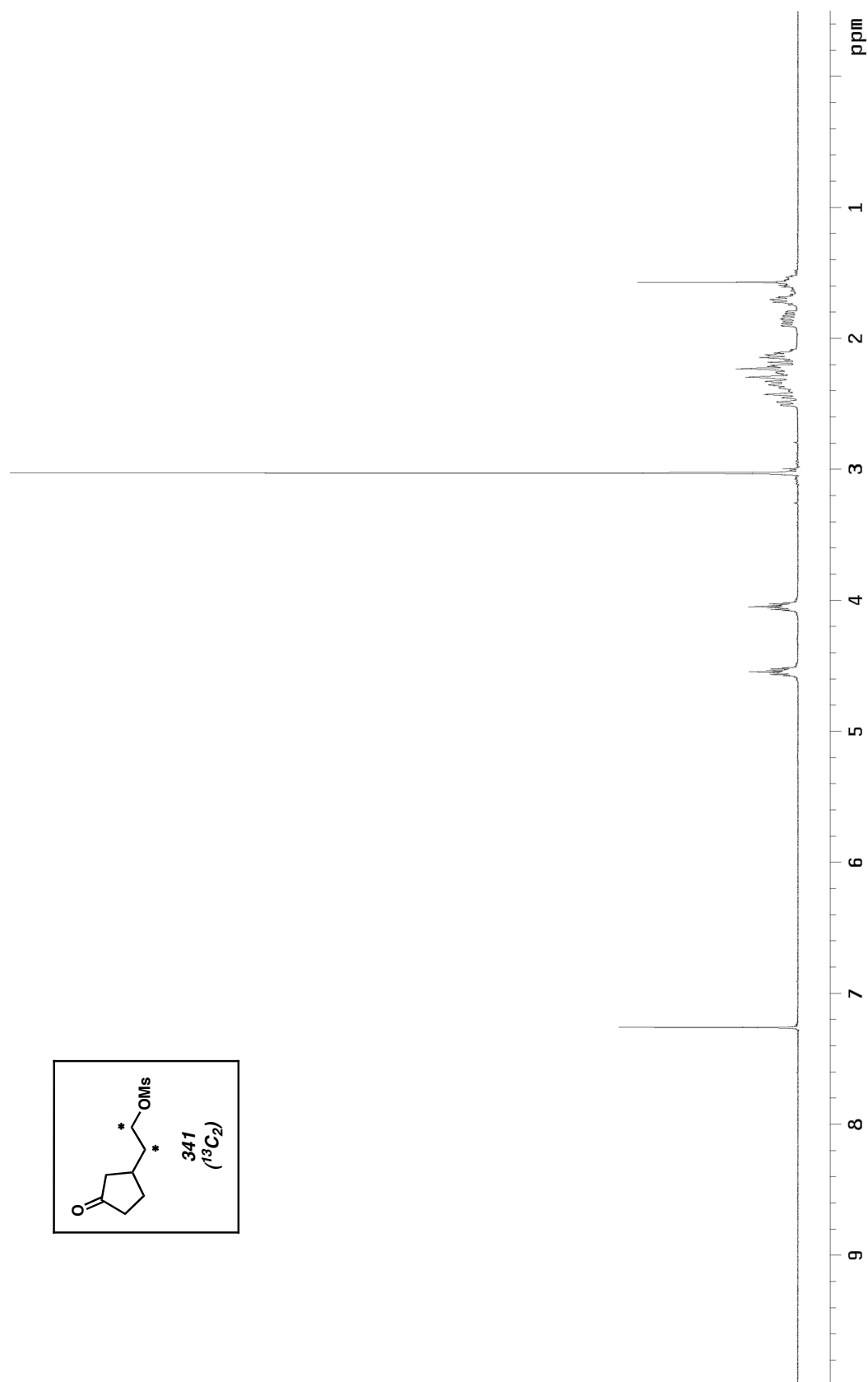


Figure A5.11. ^1H NMR spectrum (300 MHz, CDCl_3) of **341**.

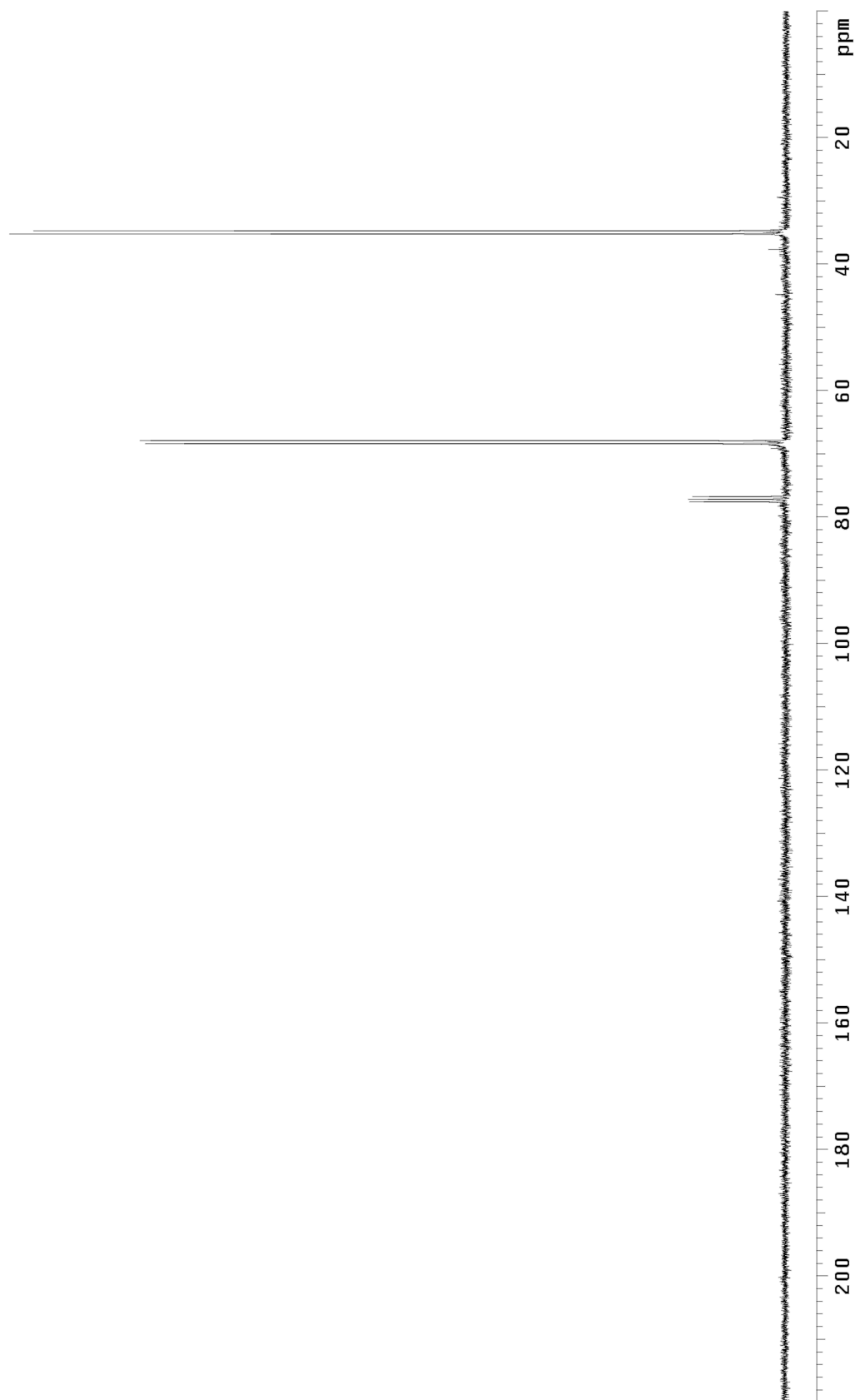
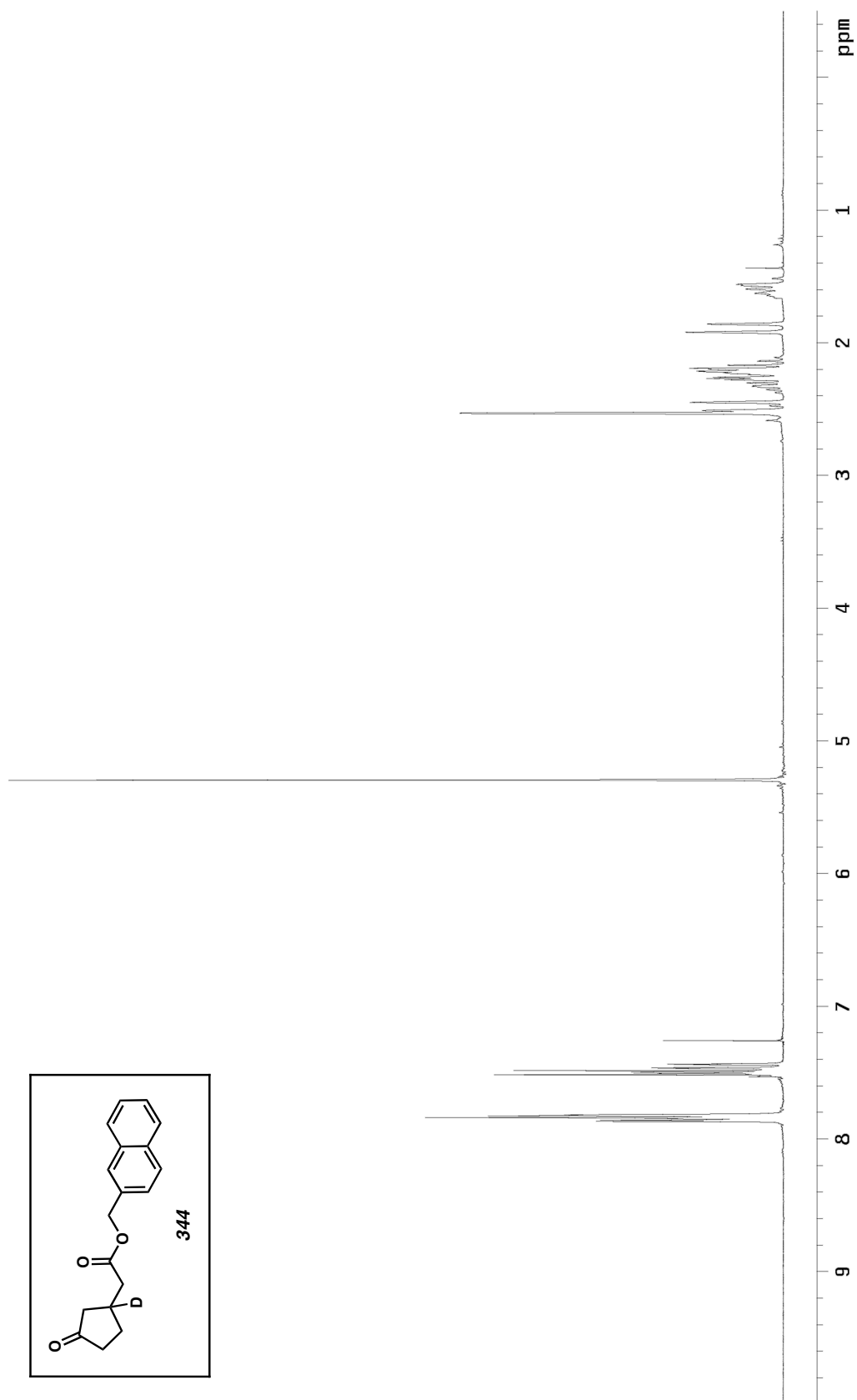


Figure A5.12. ^{13}C NMR spectrum (75 MHz, CDCl_3) of **341**.

Figure A5.13. ^1H NMR spectrum (300 MHz, CDCl_3) of **344**.

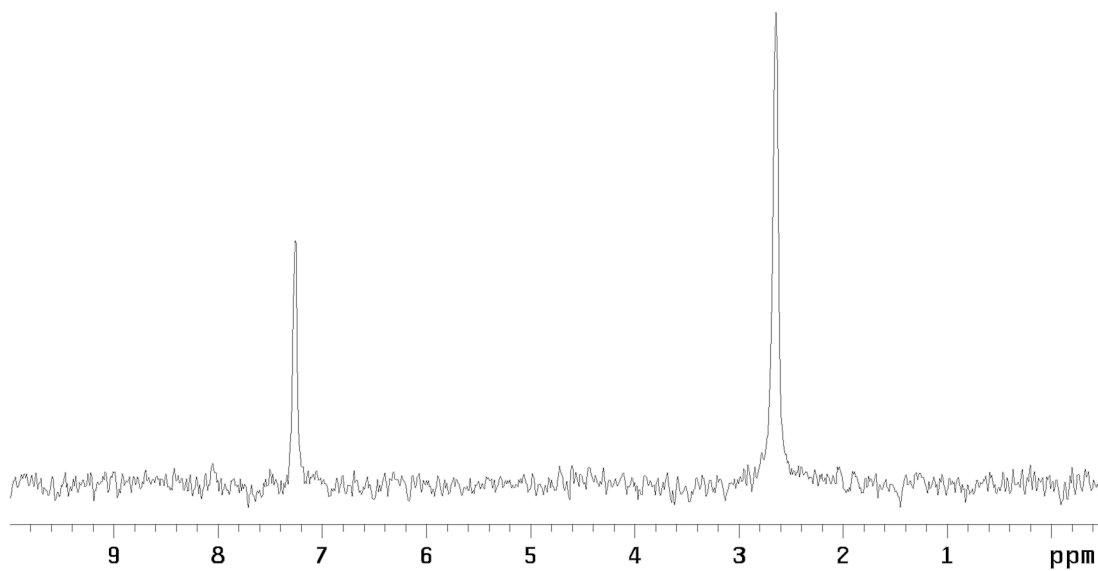


Figure A5.14. ^2H NMR spectrum (76 MHz, CHCl_3) of **344**.

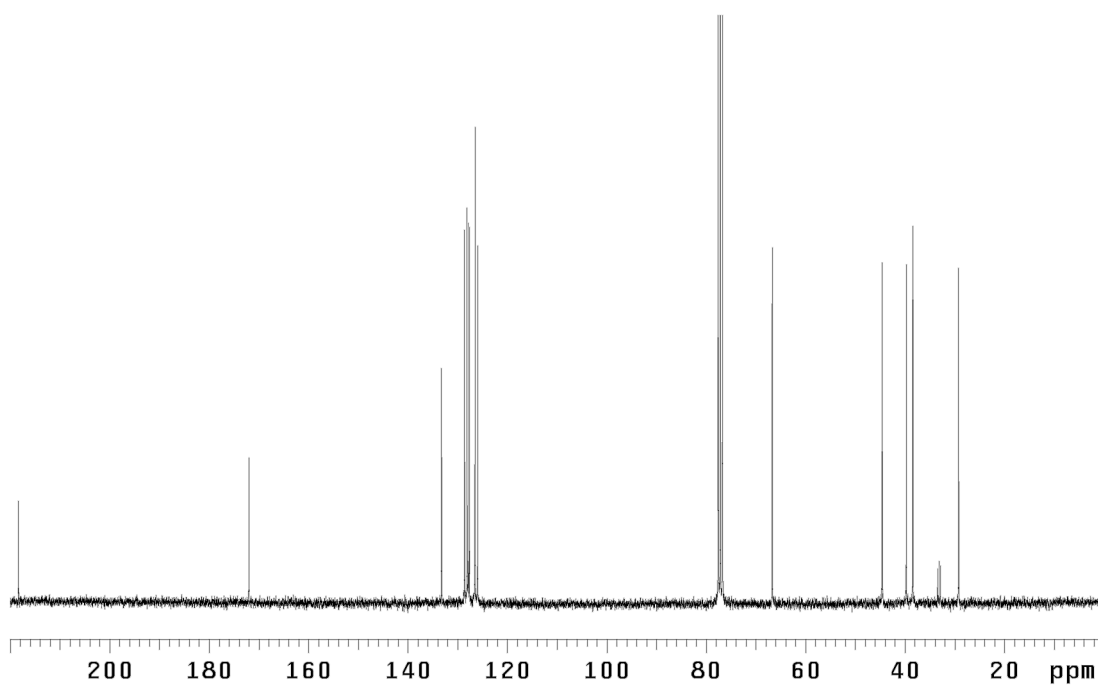
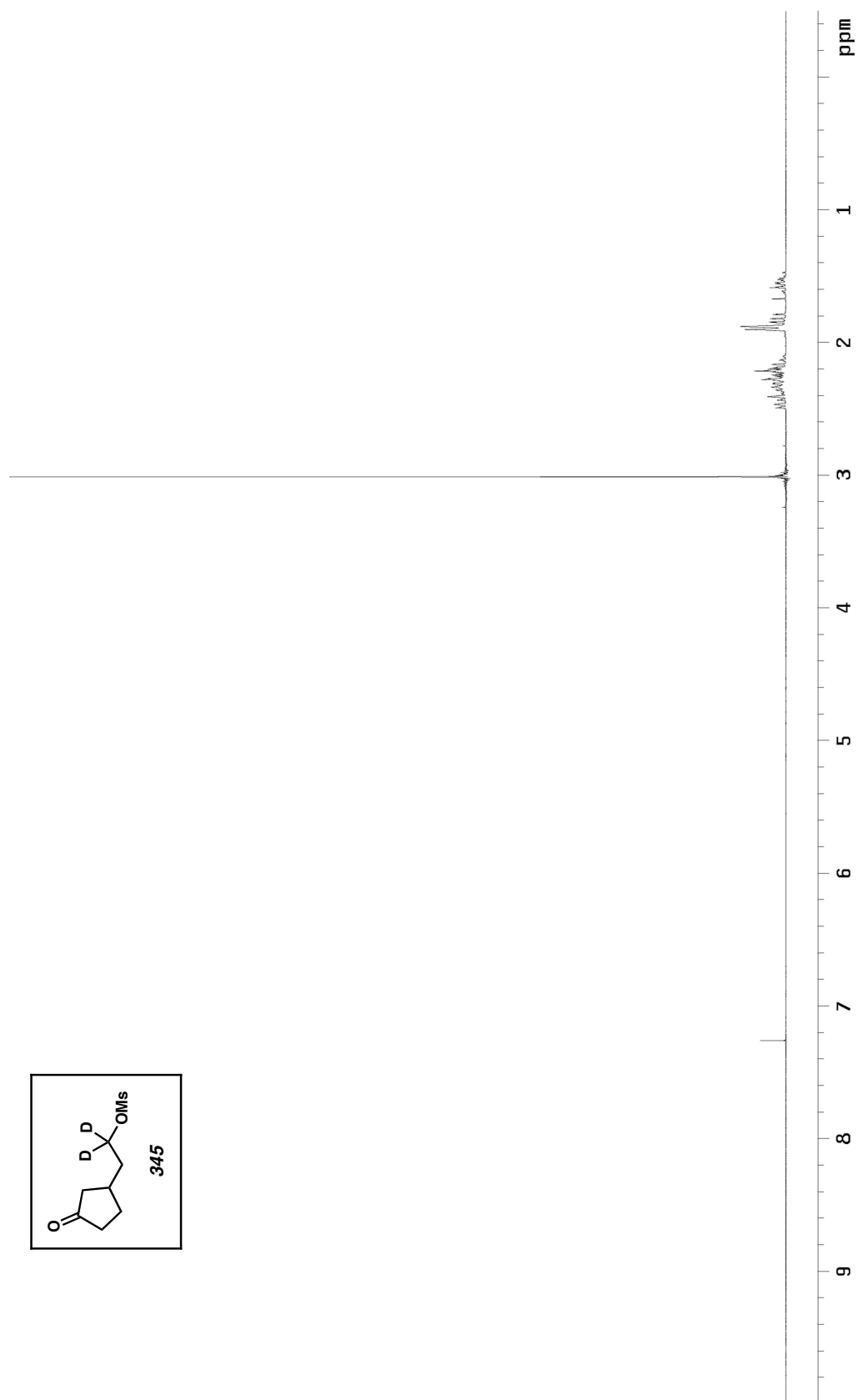


Figure A5.15. ^{13}C NMR spectrum (75 MHz, CDCl_3) of **344**.

Figure A5.16. ^1H NMR spectrum (300 MHz, CDCl_3) of **345**.

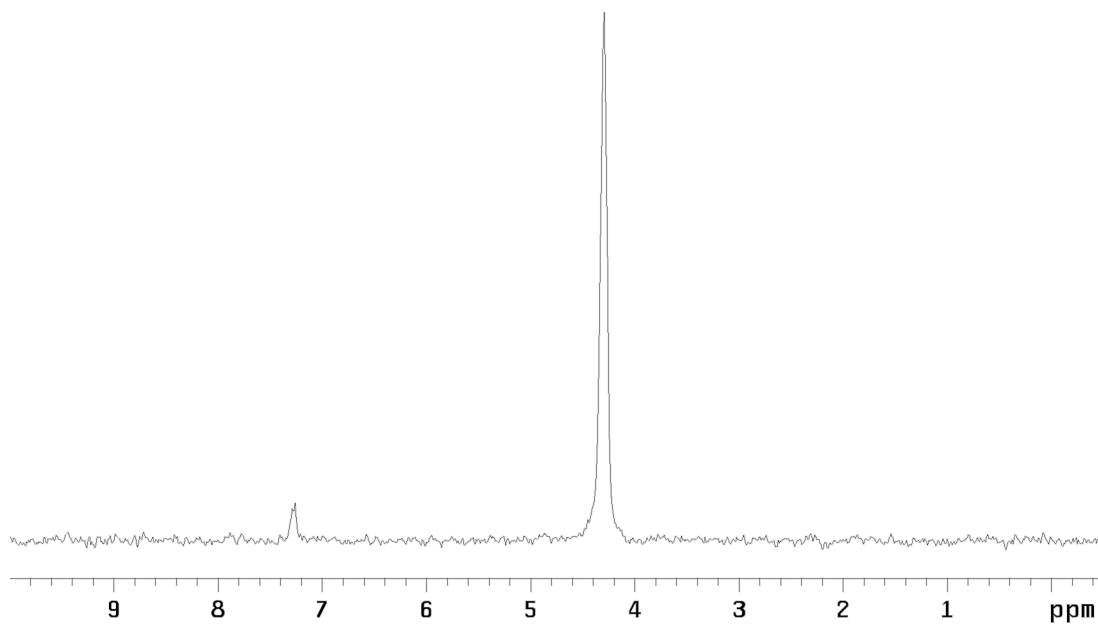


Figure A5.17. ^2H NMR spectrum (76 MHz, CHCl_3) of **345**.

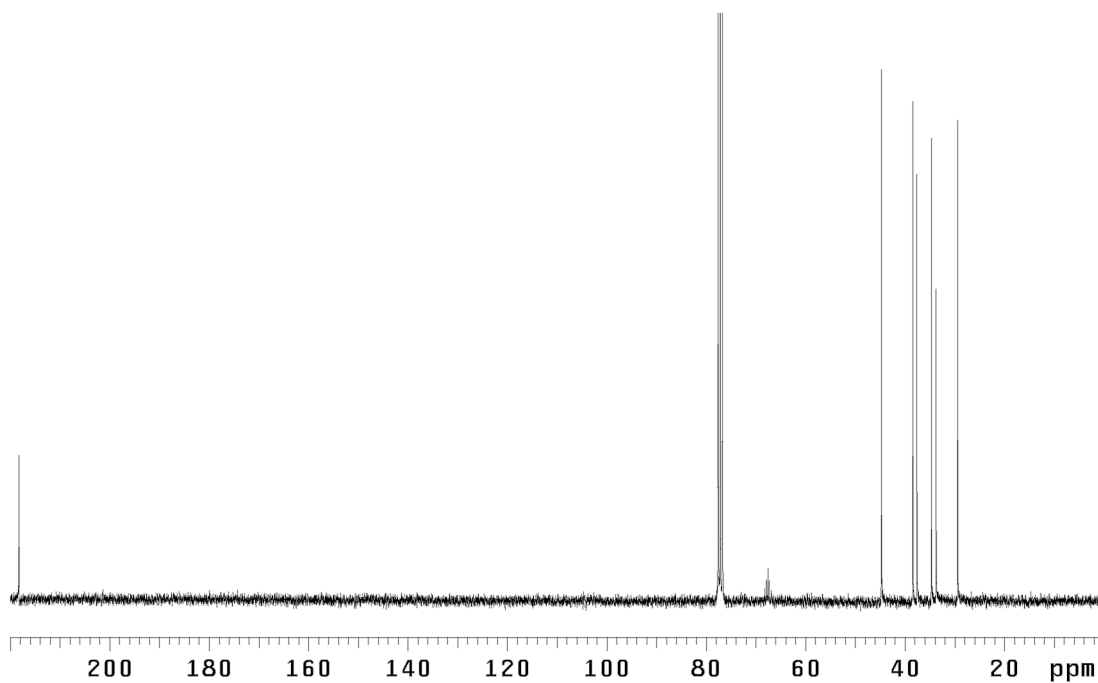


Figure A5.18. ^{13}C NMR spectrum (75 MHz, CDCl_3) of **345**.

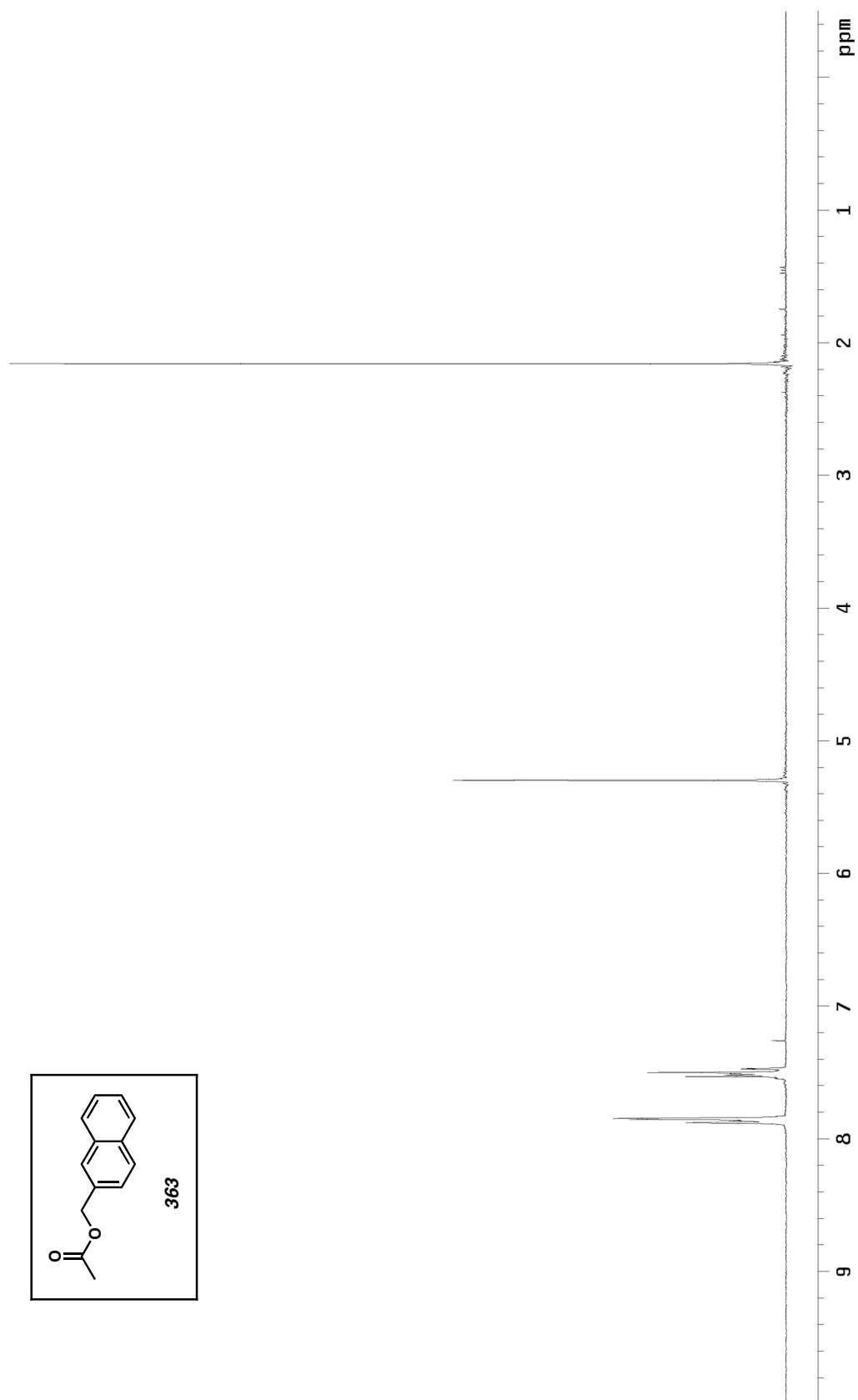


Figure A5.19. ^1H NMR spectrum (300 MHz, CDCl_3) of **363**.

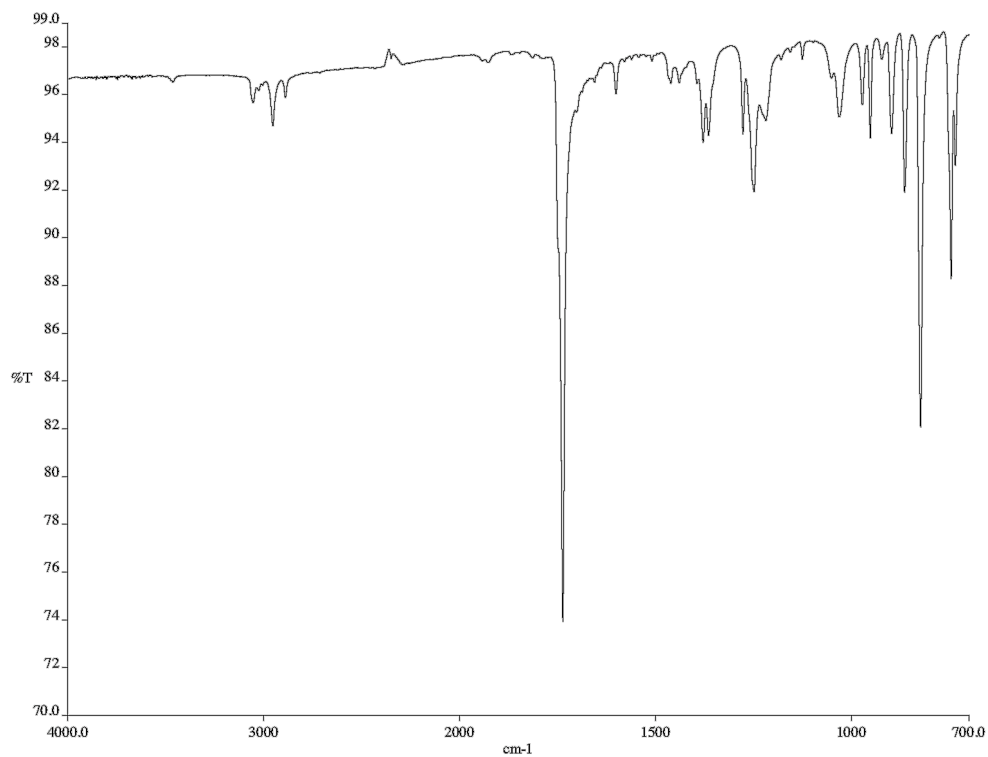


Figure A5.20. Infrared spectrum (neat film/NaCl) of **363**.

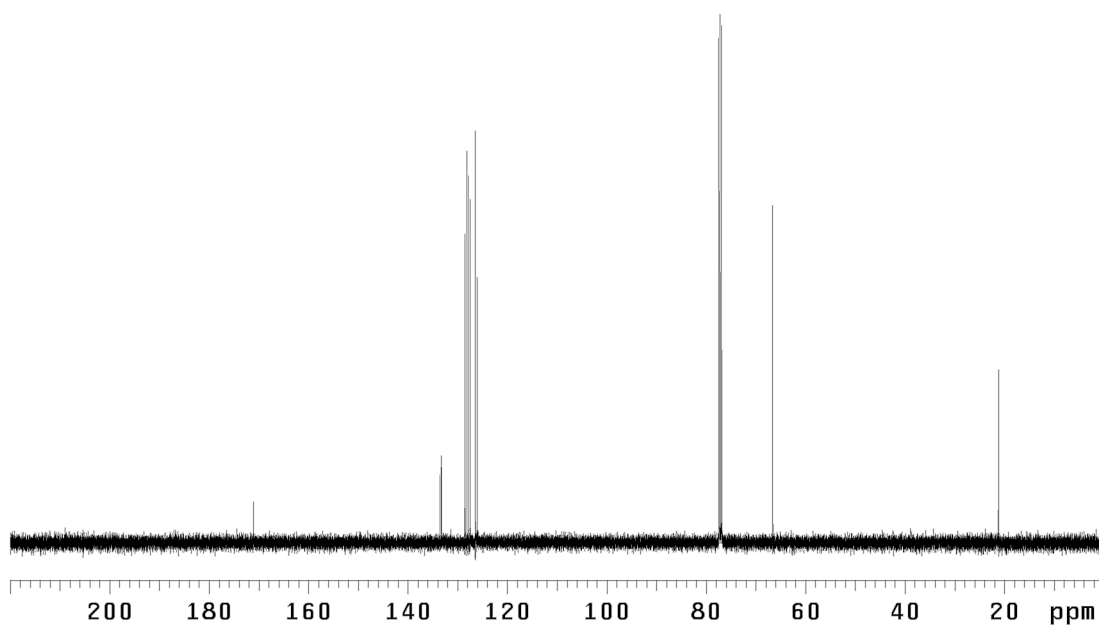


Figure A5.21. ¹³C NMR spectrum (125 MHz, CDCl₃) of **363**.

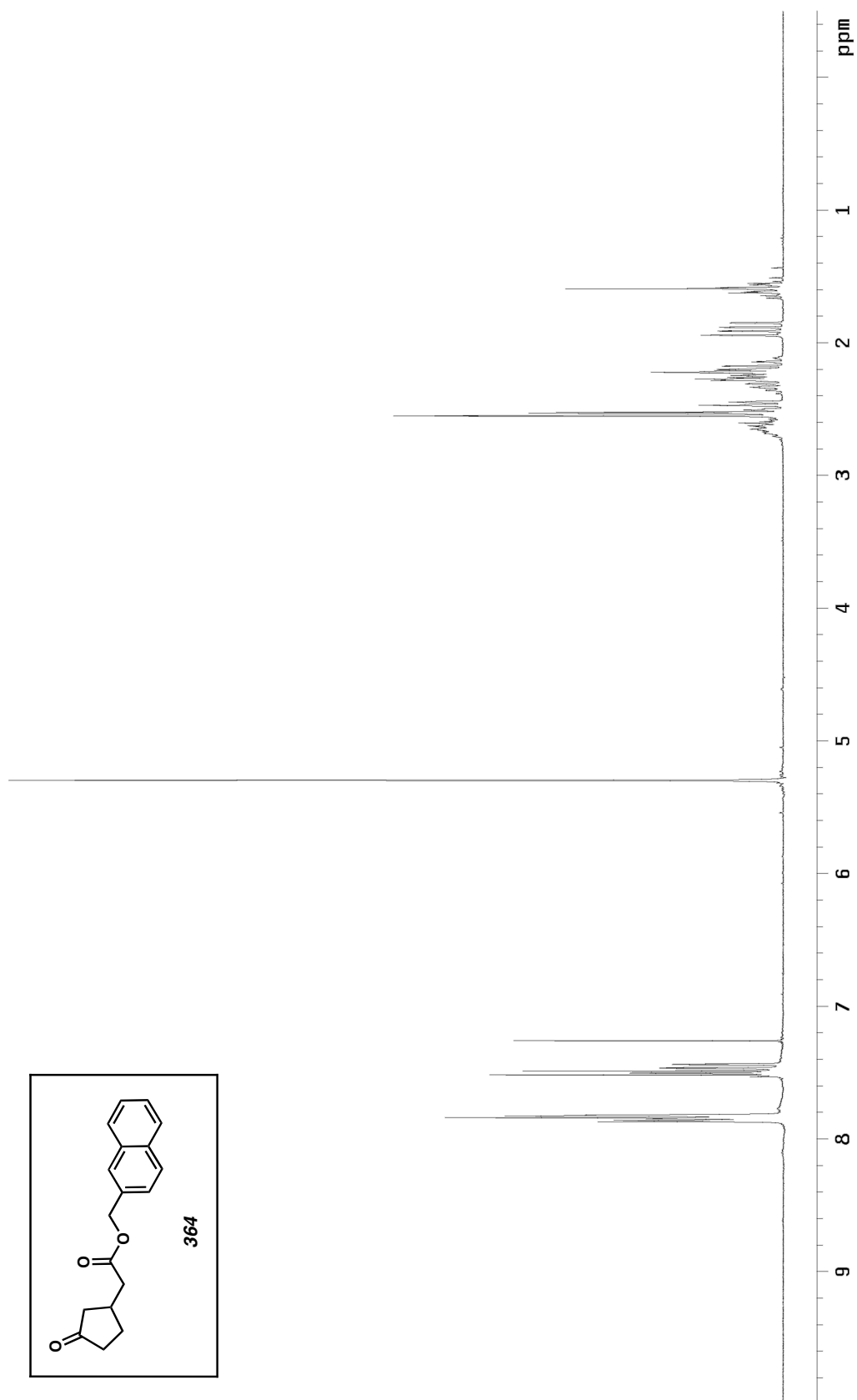


Figure A5.22. ^1H NMR spectrum (300 MHz, CDCl_3) of **364**.

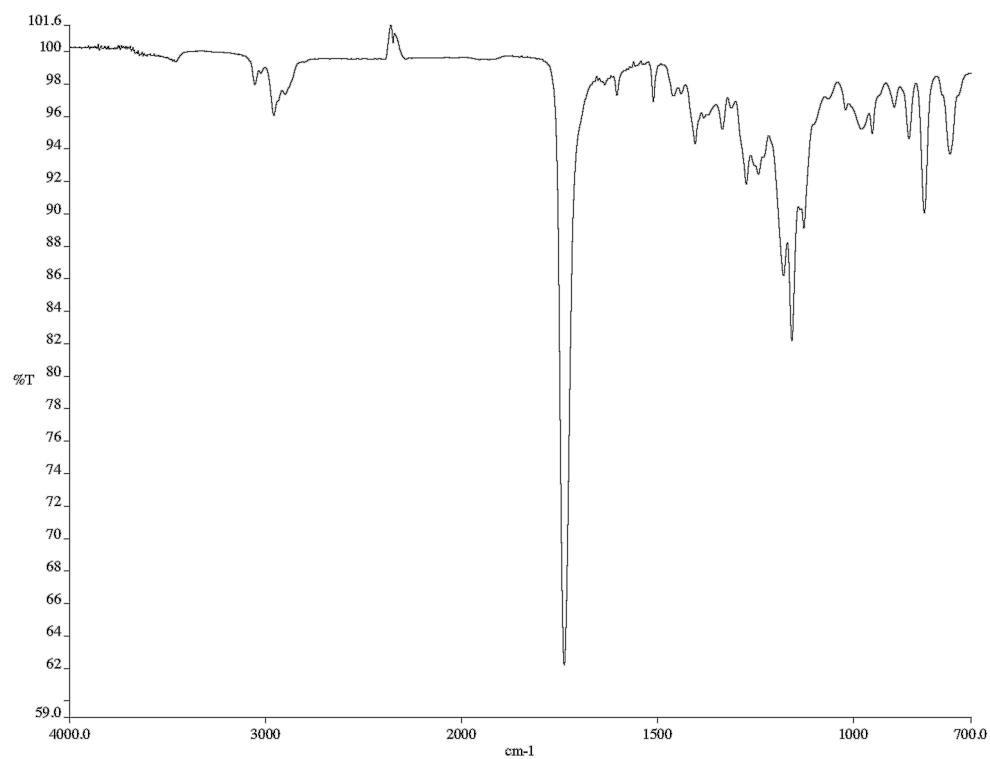


Figure A5.23. Infrared spectrum (neat film/NaCl) of **364**.

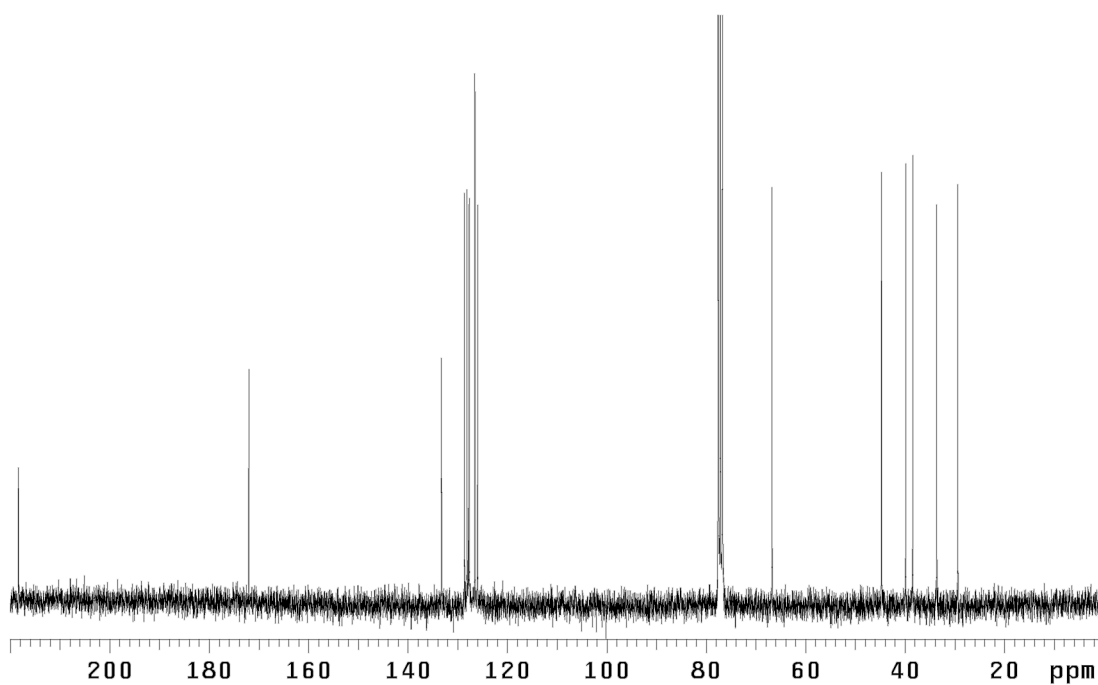


Figure A5.24. ¹³C NMR spectrum (75 MHz, CDCl₃) of **364**.

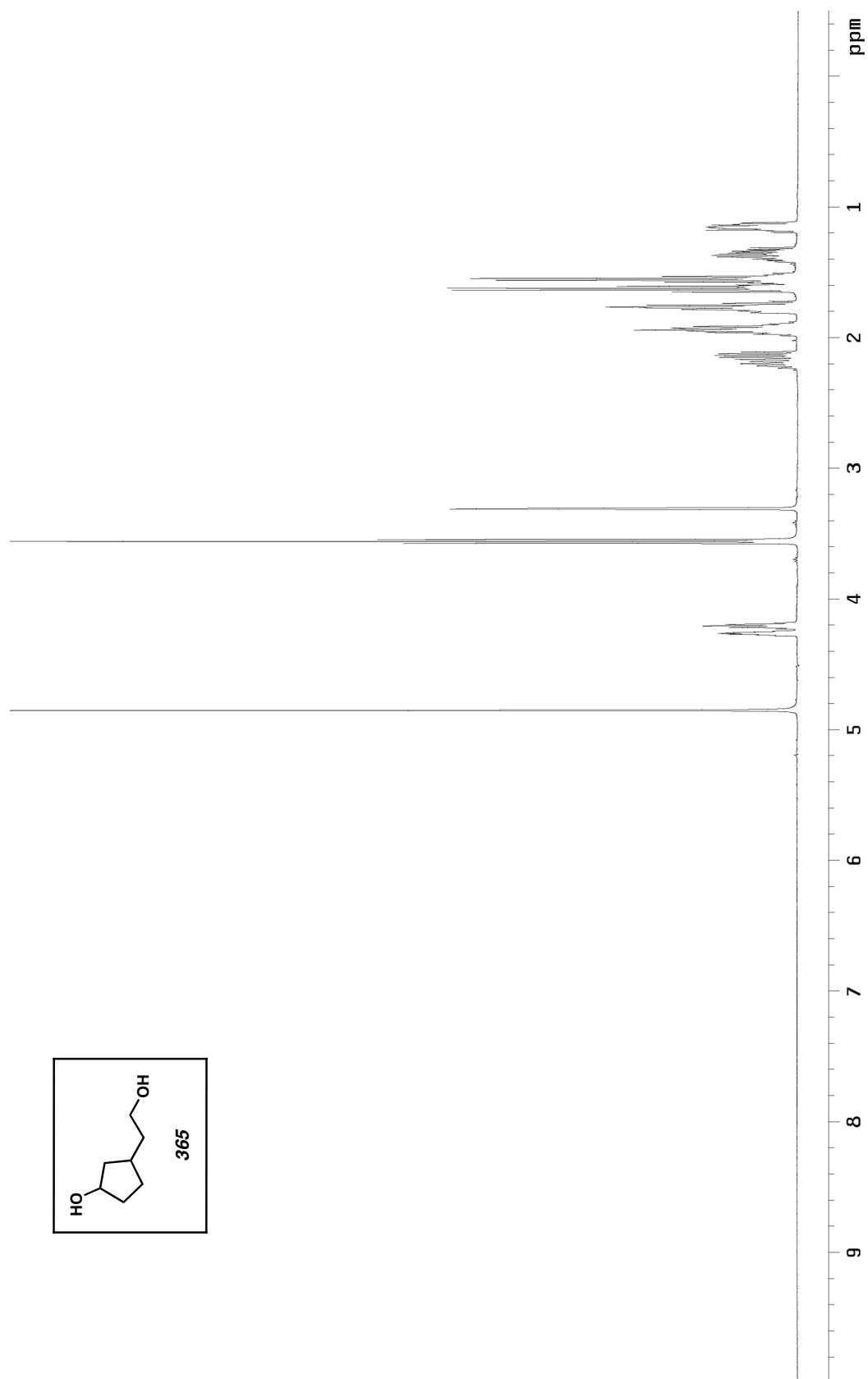


Figure A5.25. ^1H NMR spectrum (500 MHz, CD_3OD) of **365**.

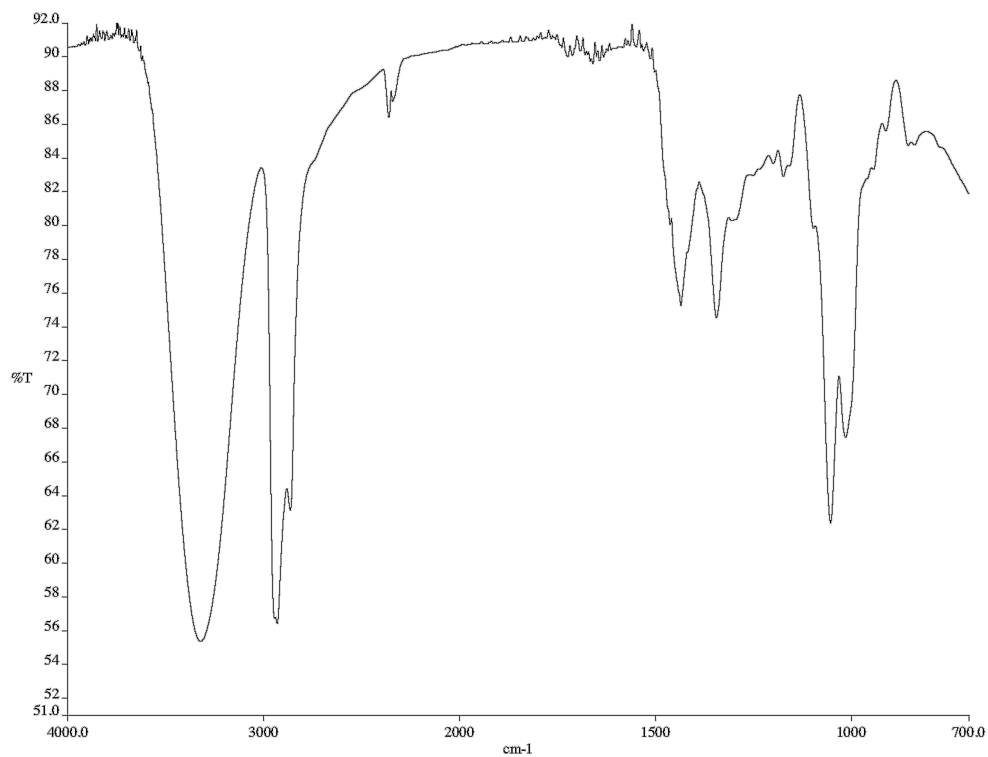


Figure A5.26. Infrared spectrum (neat film/NaCl) of **365**.

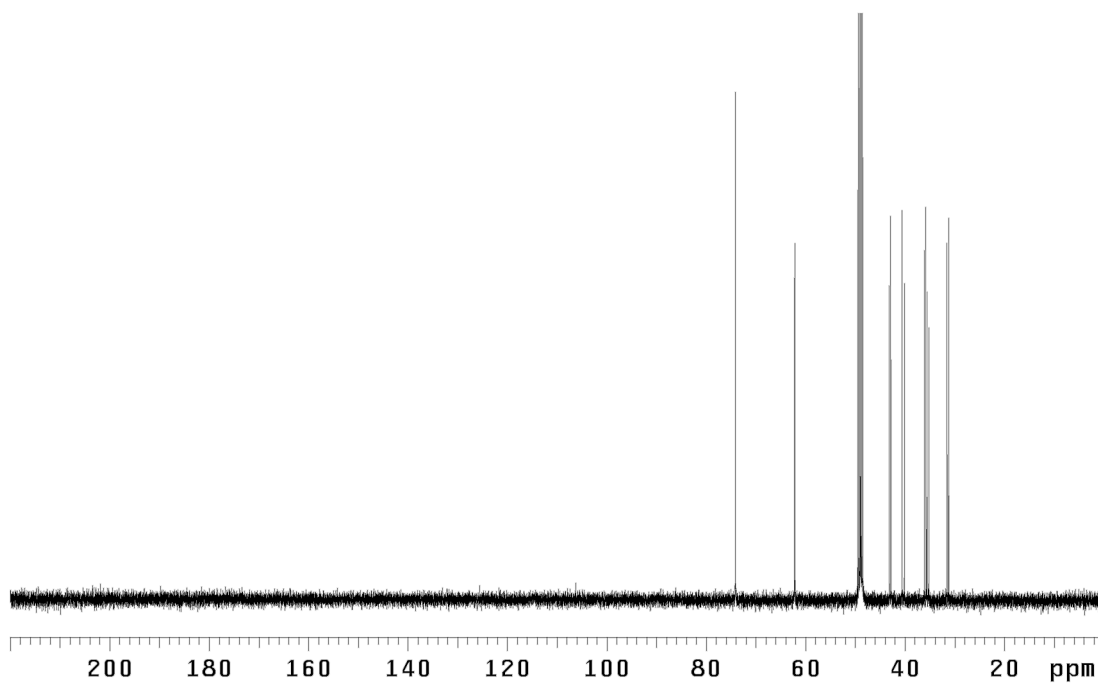


Figure A5.27. ¹³C NMR spectrum (125 MHz, CD₃OD) of **365**.

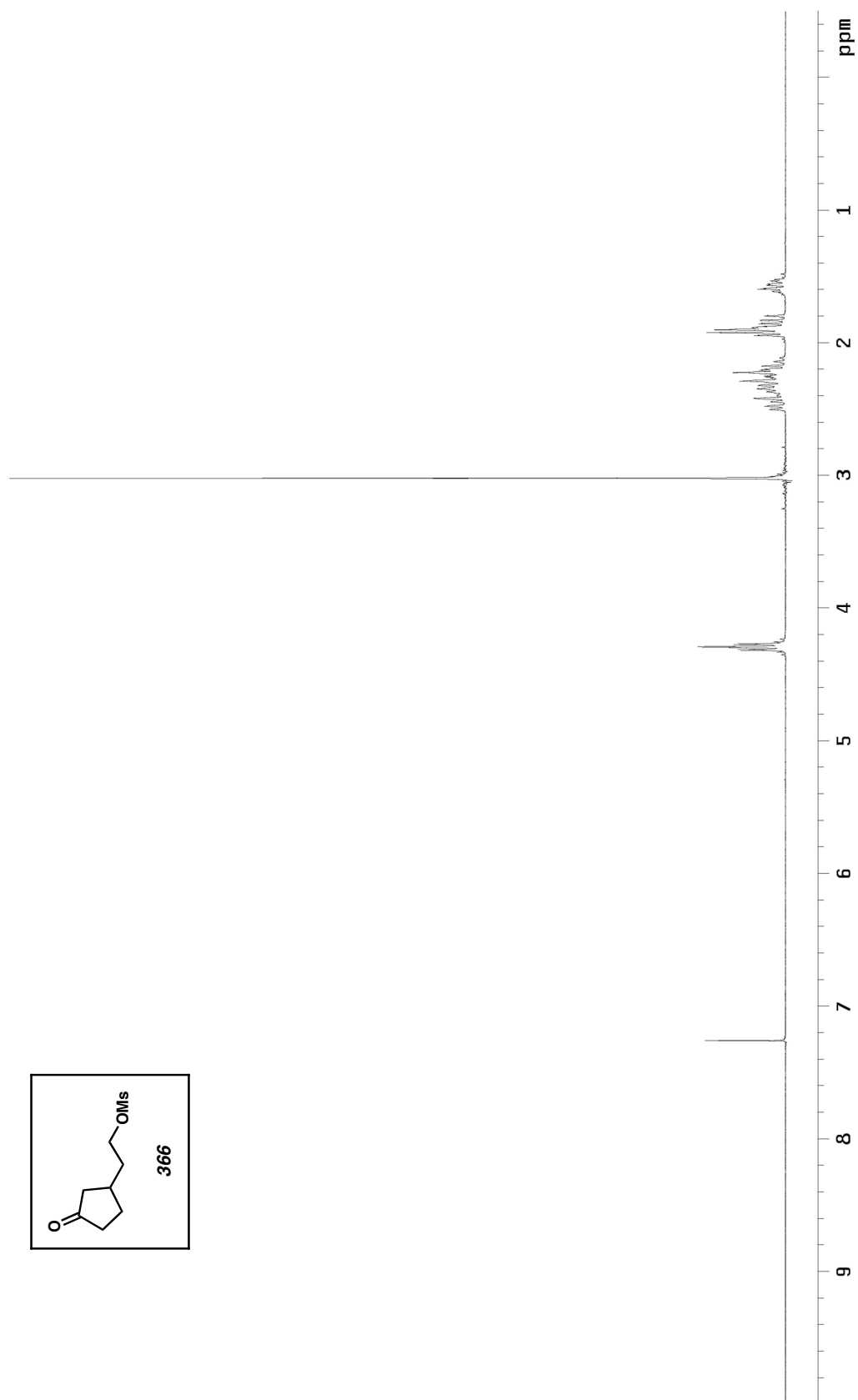


Figure A5.28. ^1H NMR spectrum (300 MHz, CDCl_3) of **366**.

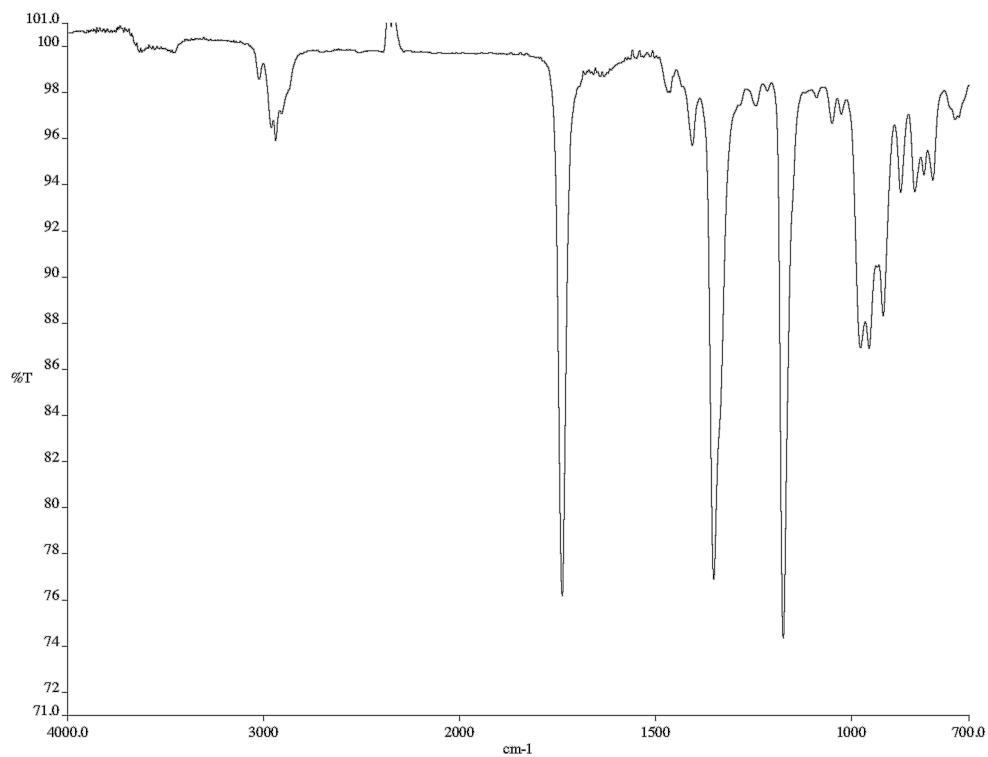


Figure A5.29. Infrared spectrum (neat film/NaCl) of **366**.

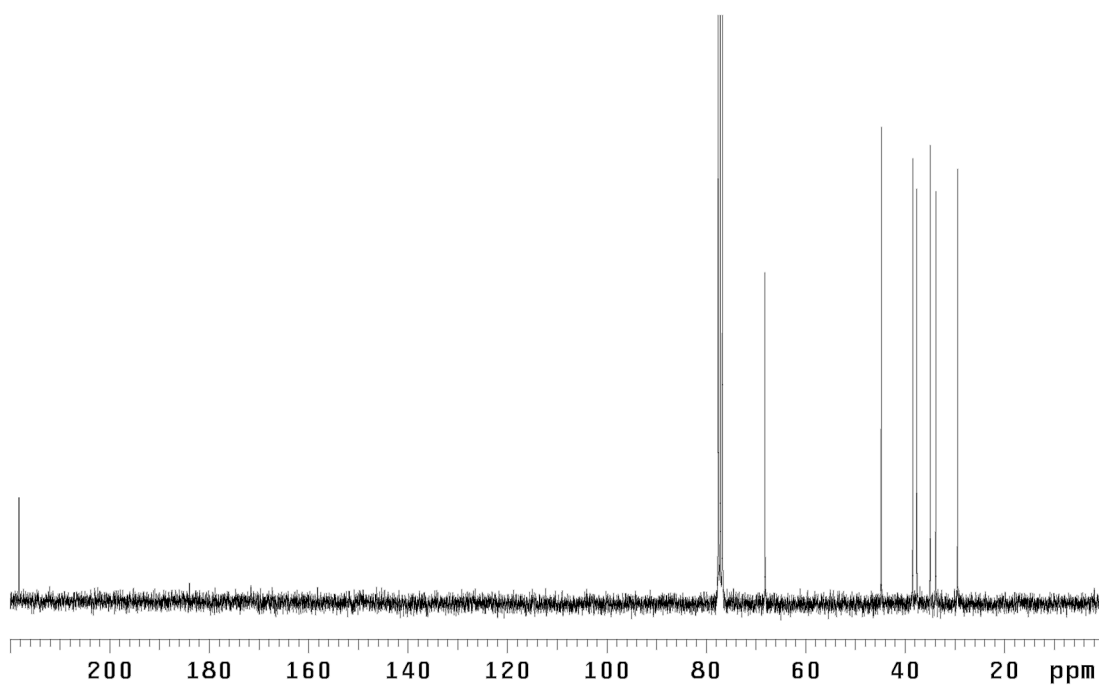


Figure A5.30. ¹³C NMR spectrum (75 MHz, CDCl₃) of **366**.

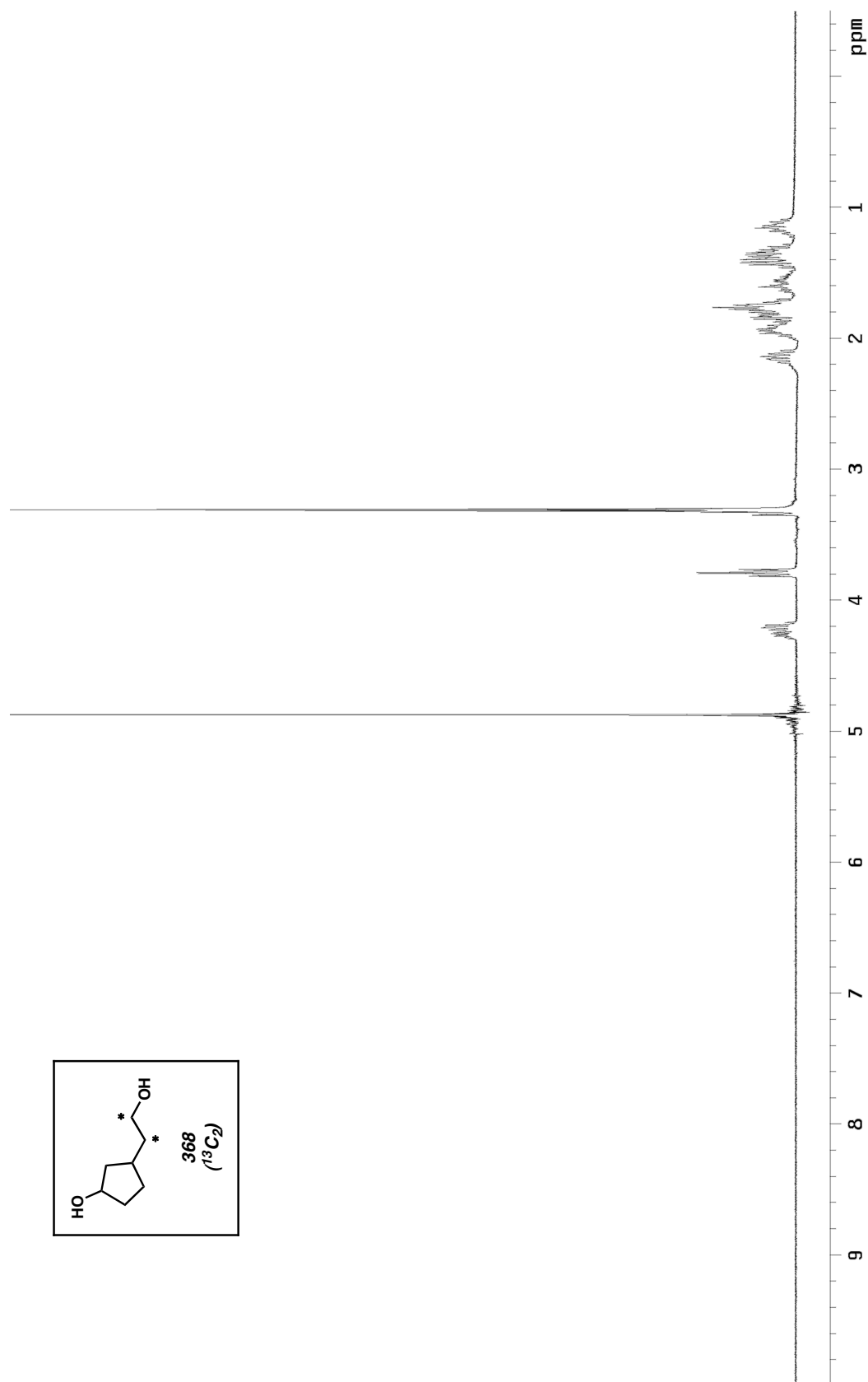


Figure A5.31. ^1H NMR spectrum (300 MHz, CD_3OD) of **368**.

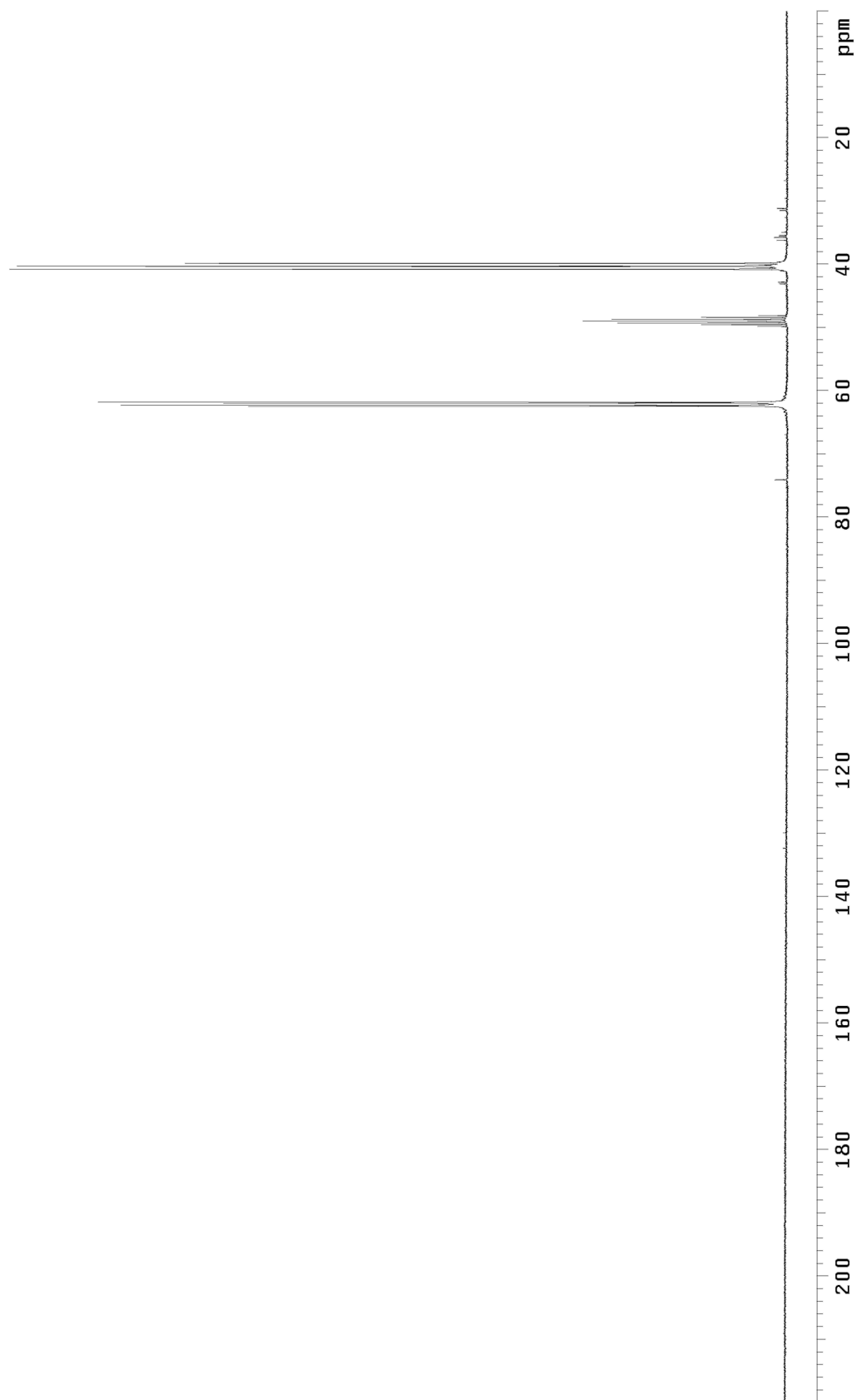
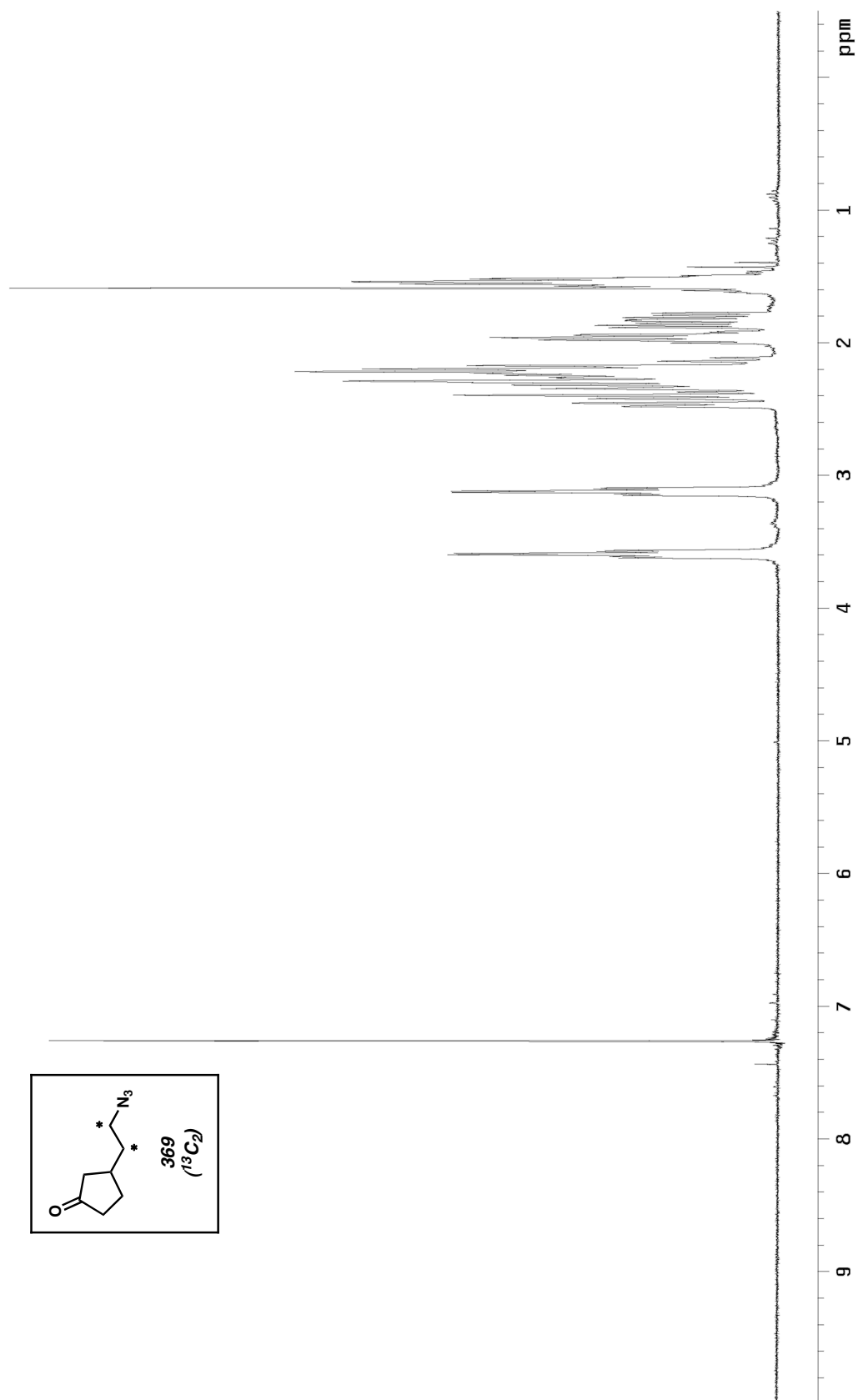


Figure A5.32. ^{13}C NMR spectrum (75 MHz, CD_3OD) of **368**.

Figure A5.33. ^1H NMR spectrum (300 MHz, CDCl_3) of **369**.

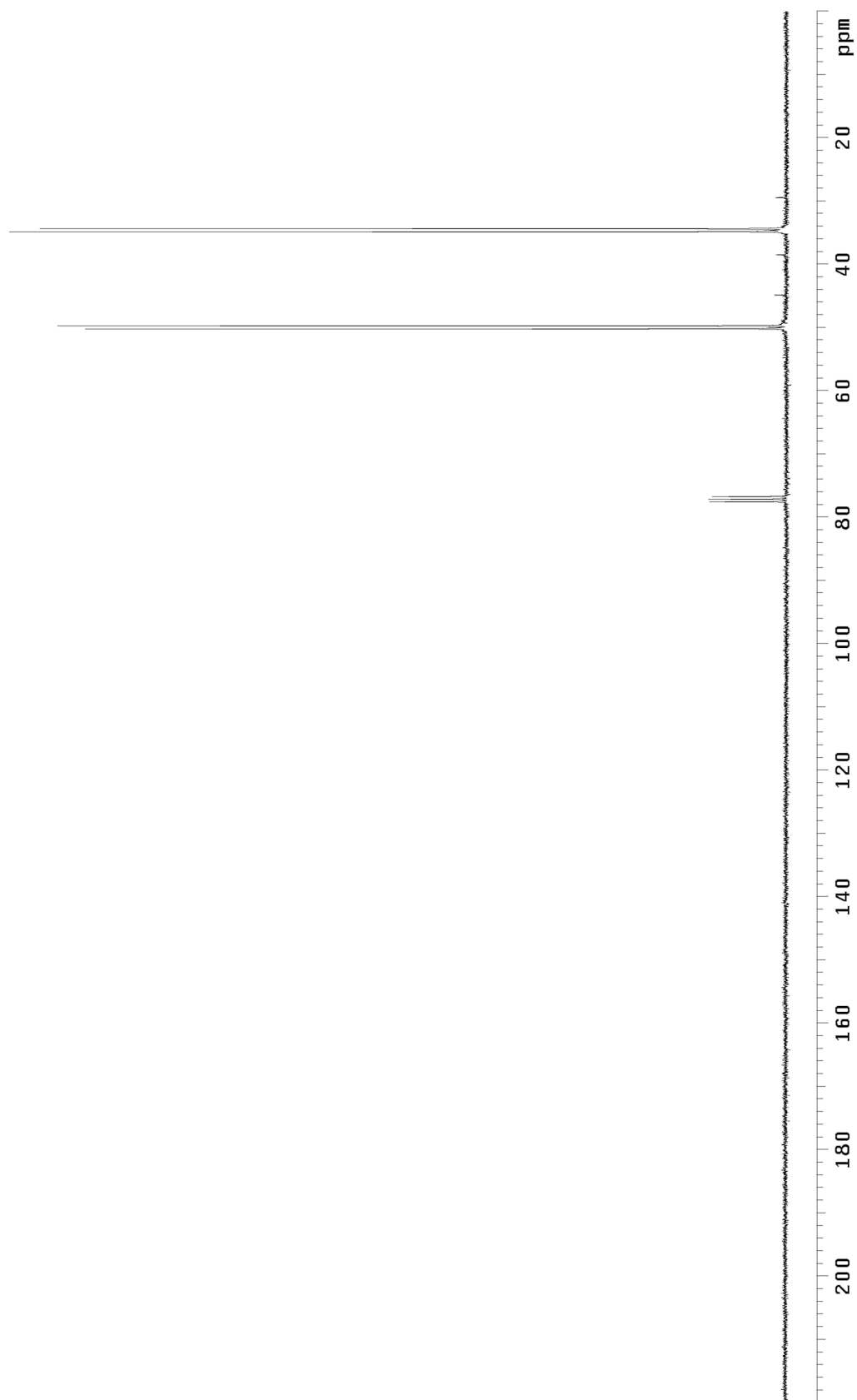


Figure A5.34. ^{13}C NMR spectrum (75 MHz, CDCl_3) of **369**.

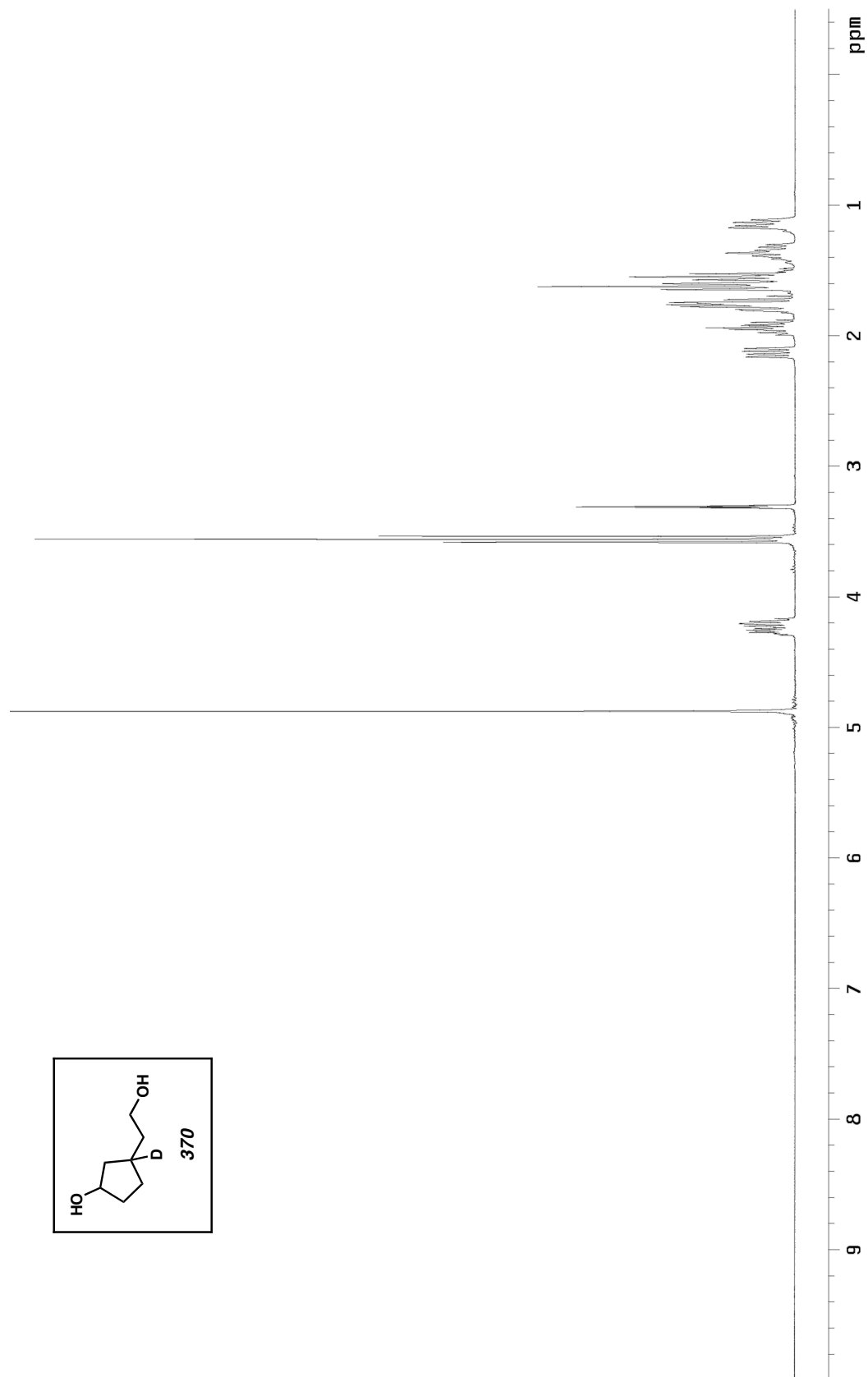


Figure A5.35. ^1H NMR spectrum (300 MHz, CD_3OD) of **370**.

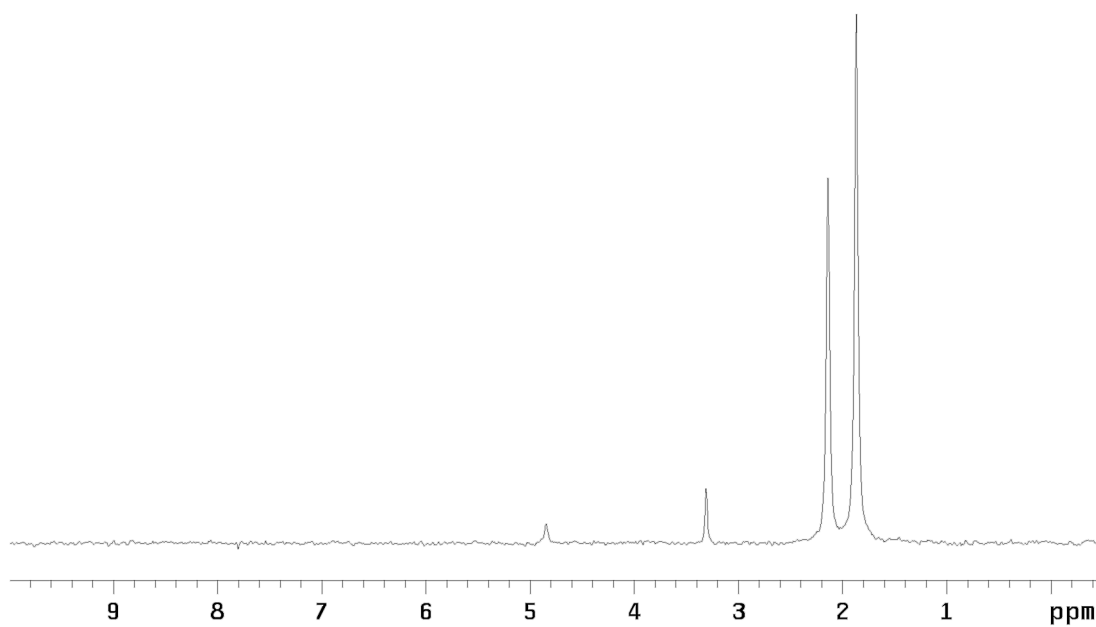


Figure A5.36. ^2H NMR spectrum (76 MHz, CH_3OH) of **370**.

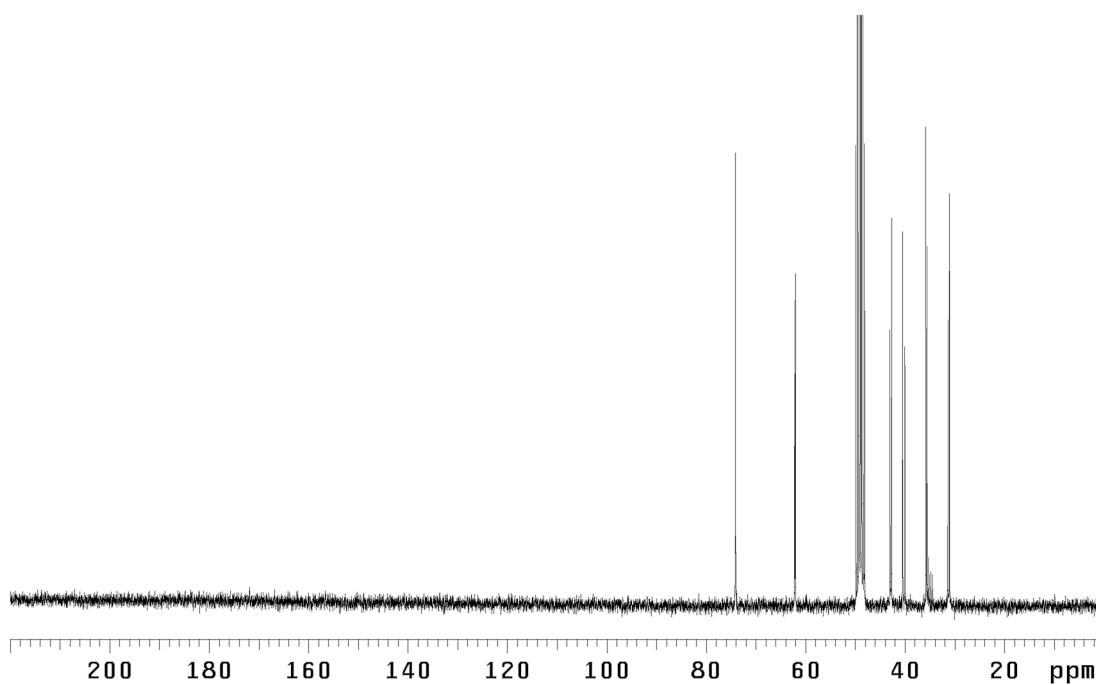


Figure A5.37. ^{13}C NMR spectrum (75 MHz, CD_3OD) of **370**.

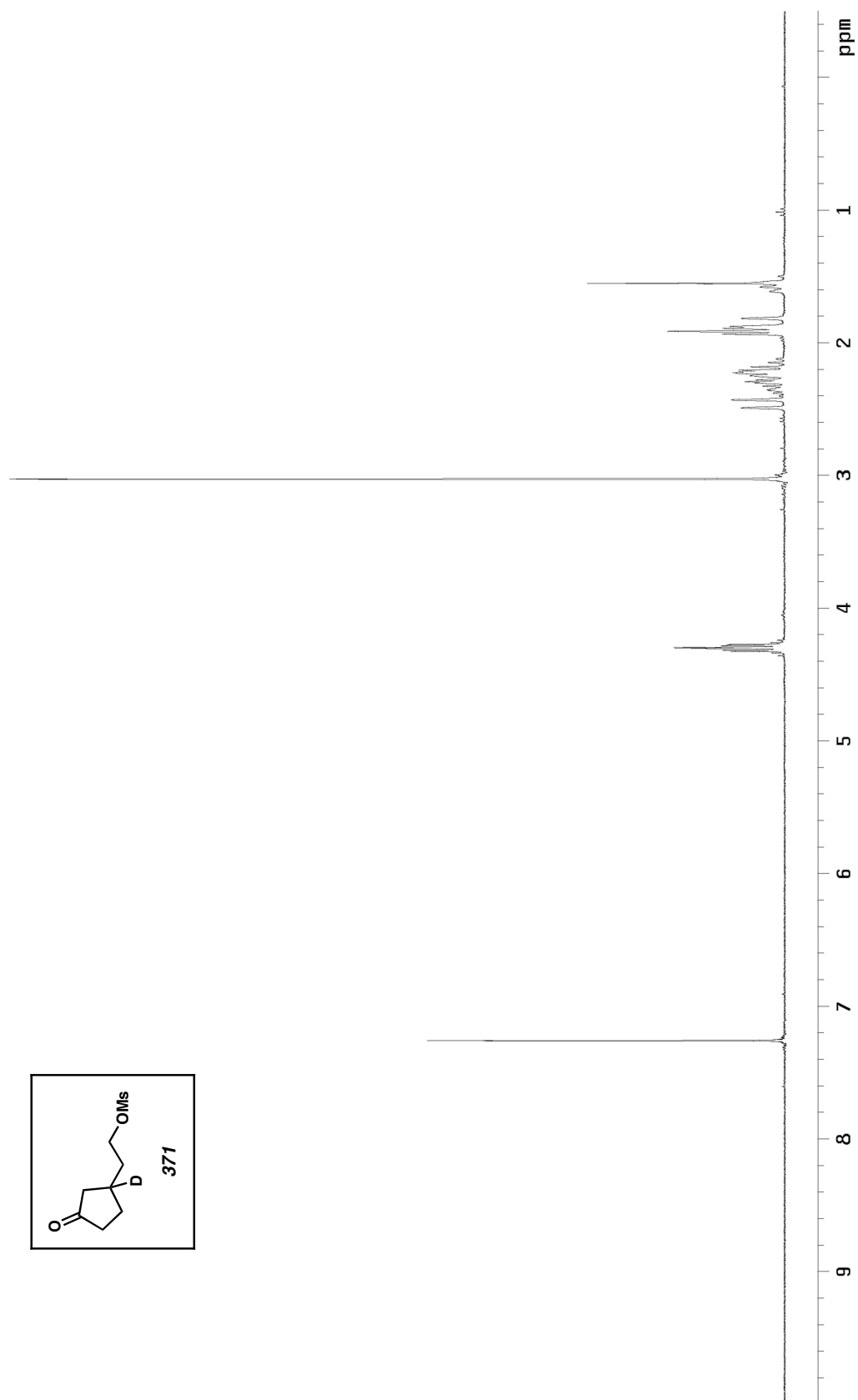


Figure A5.38. ^1H NMR spectrum (300 MHz, CDCl_3) of **371**.

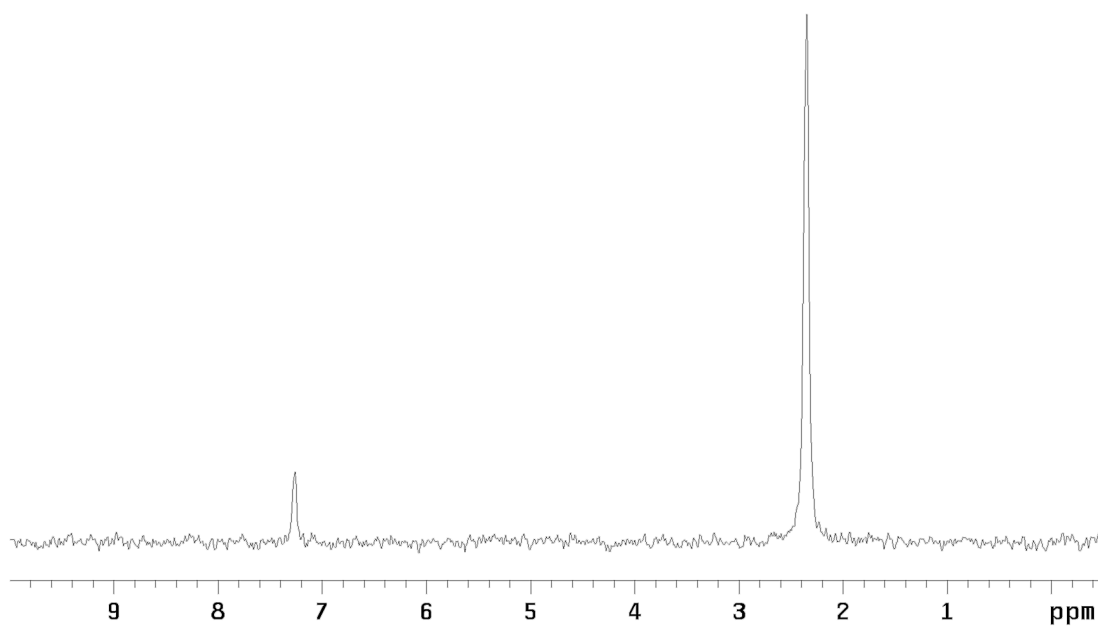


Figure A5.39. ^2H NMR spectrum (76 MHz, CHCl_3) of **371**.

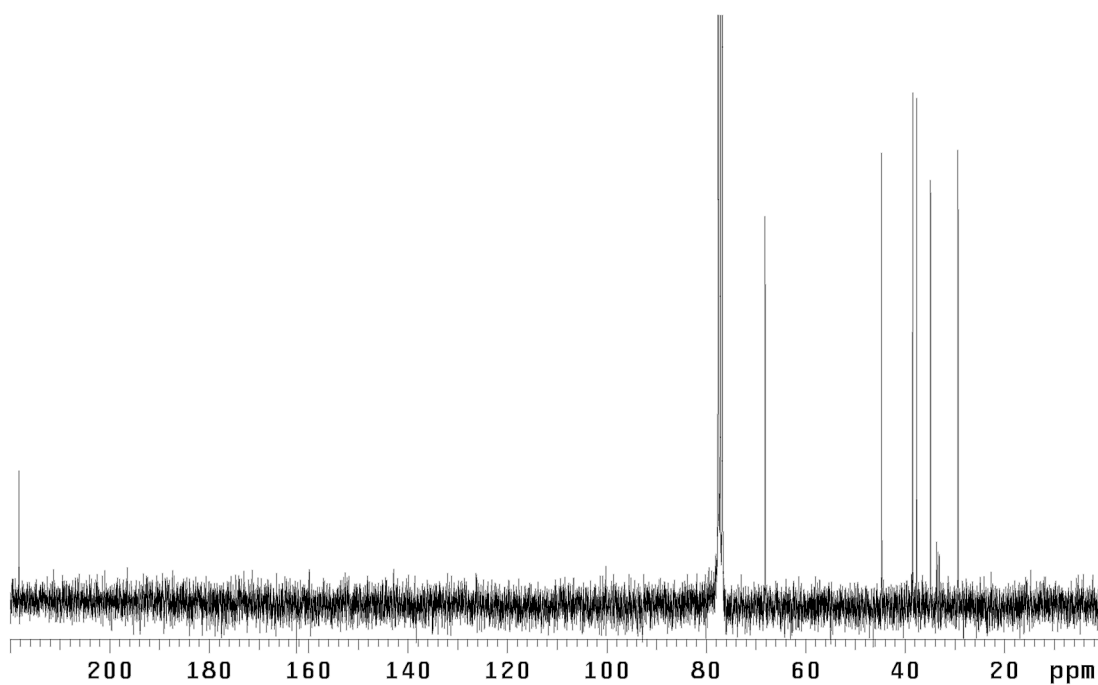


Figure A5.40. ^{13}C NMR spectrum (75 MHz, CDCl_3) of **371**.

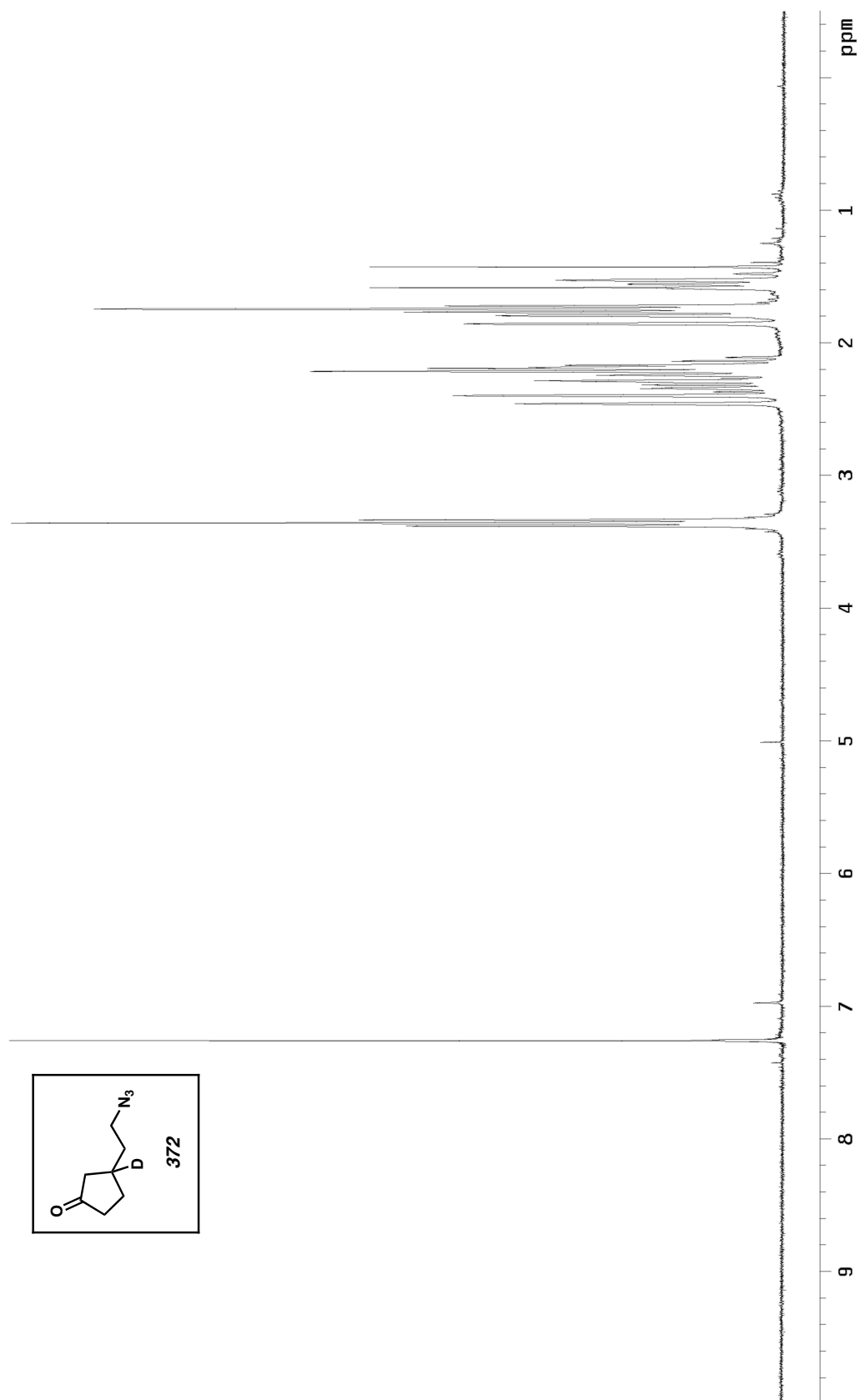


Figure A5.41. ^1H NMR spectrum (300 MHz, CDCl_3) of **372**.

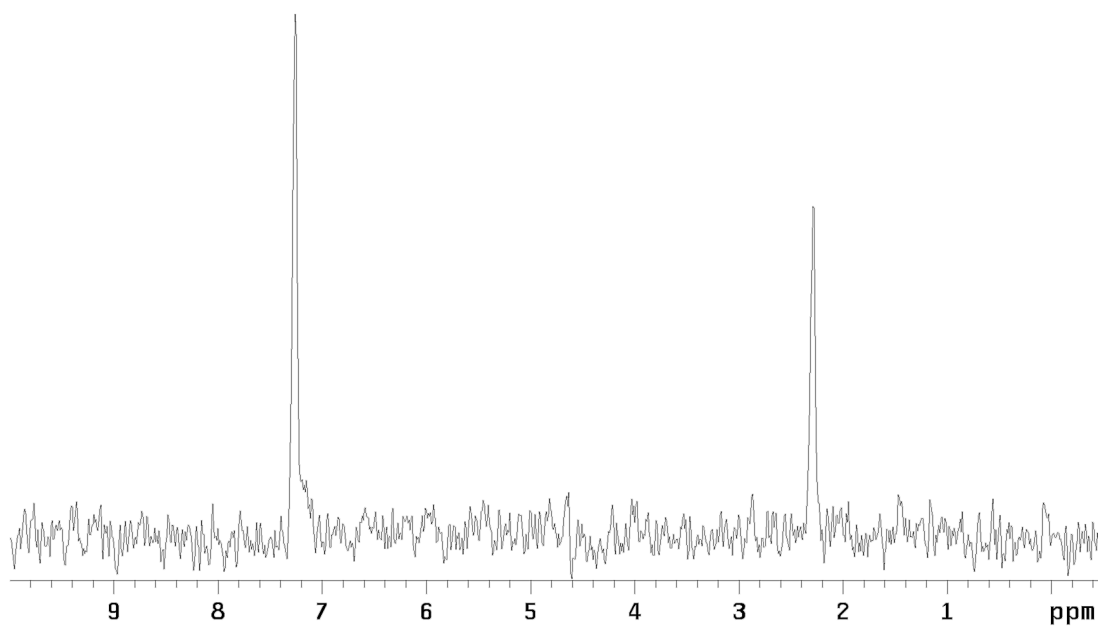


Figure A5.42. ^2H NMR spectrum (76 MHz, CHCl_3) of **372**.

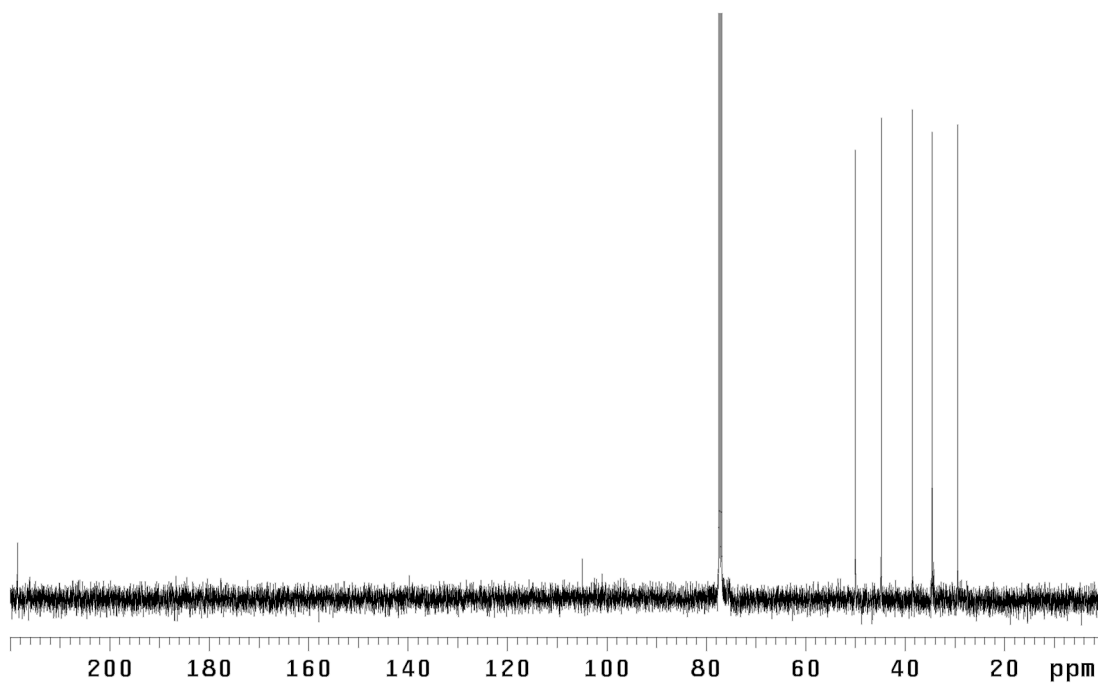
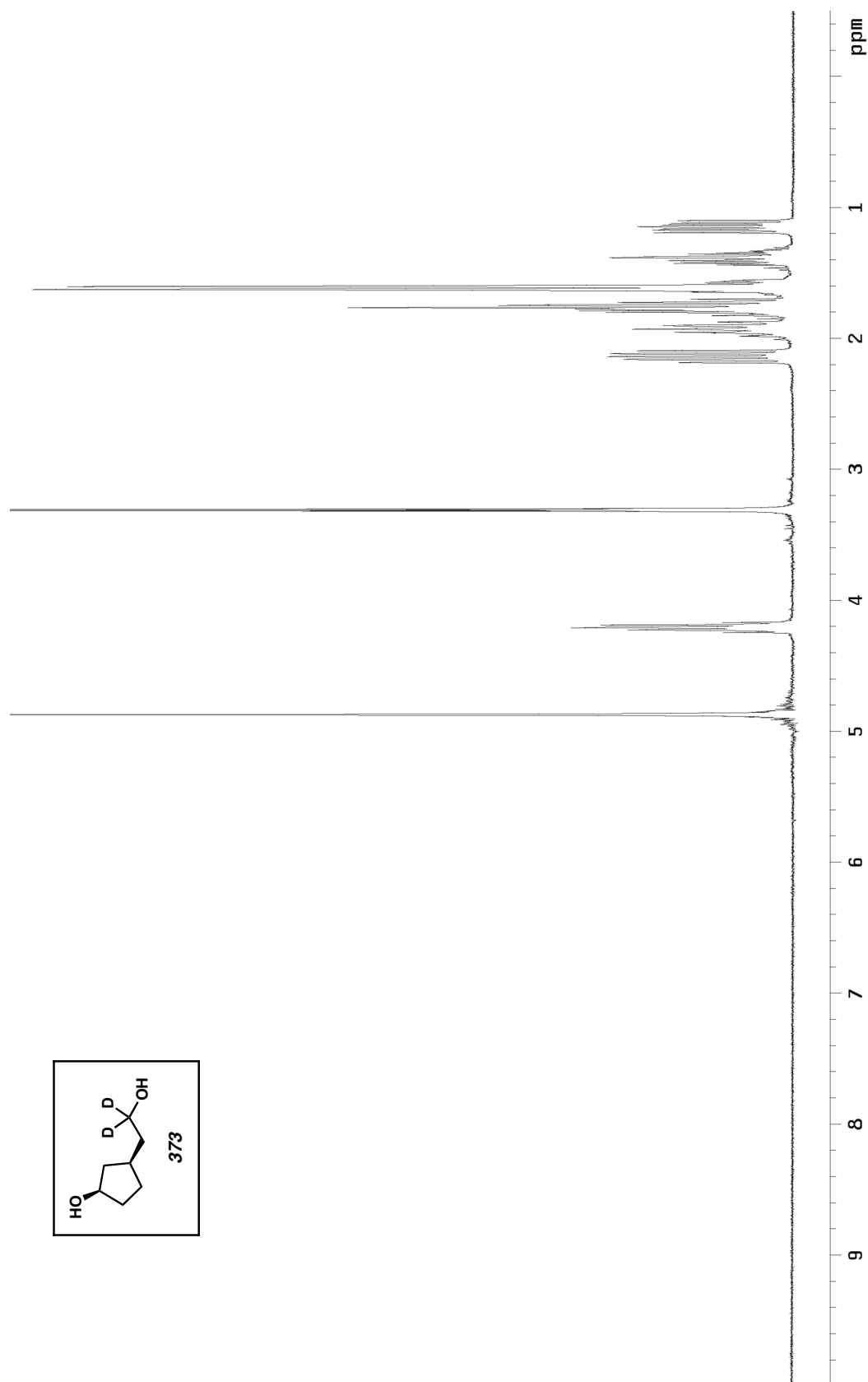


Figure A5.43. ^{13}C NMR spectrum (125 MHz, CDCl_3) of **372**.

Figure A5.44. ^1H NMR spectrum (300 MHz, CD_3OD) of **373**.

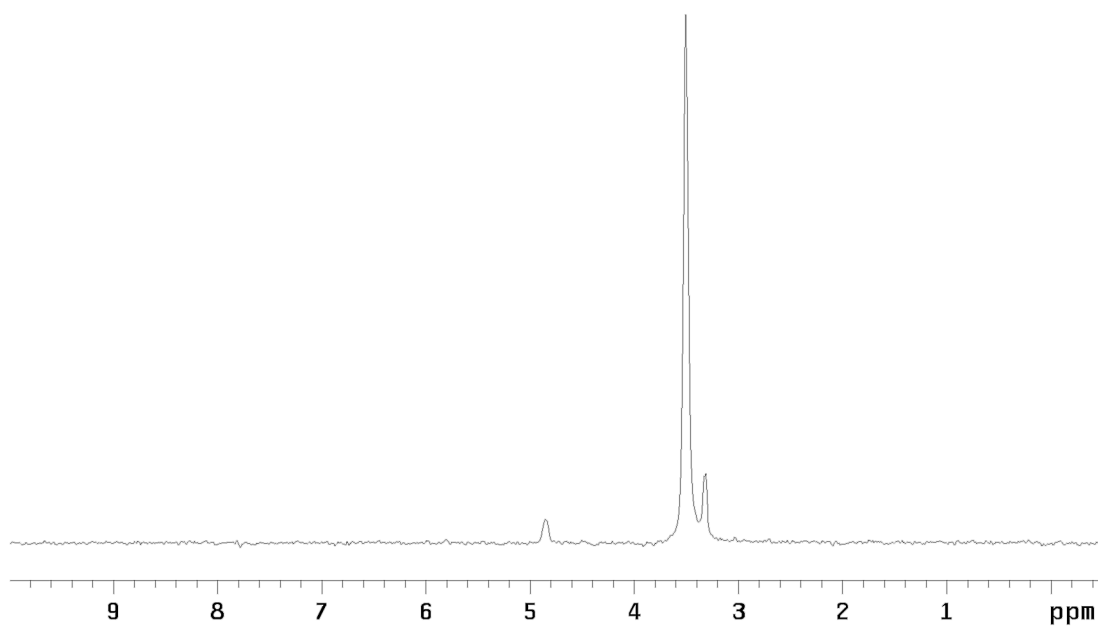


Figure A5.45. ^2H NMR spectrum (76 MHz, CH_3OH) of **373**.

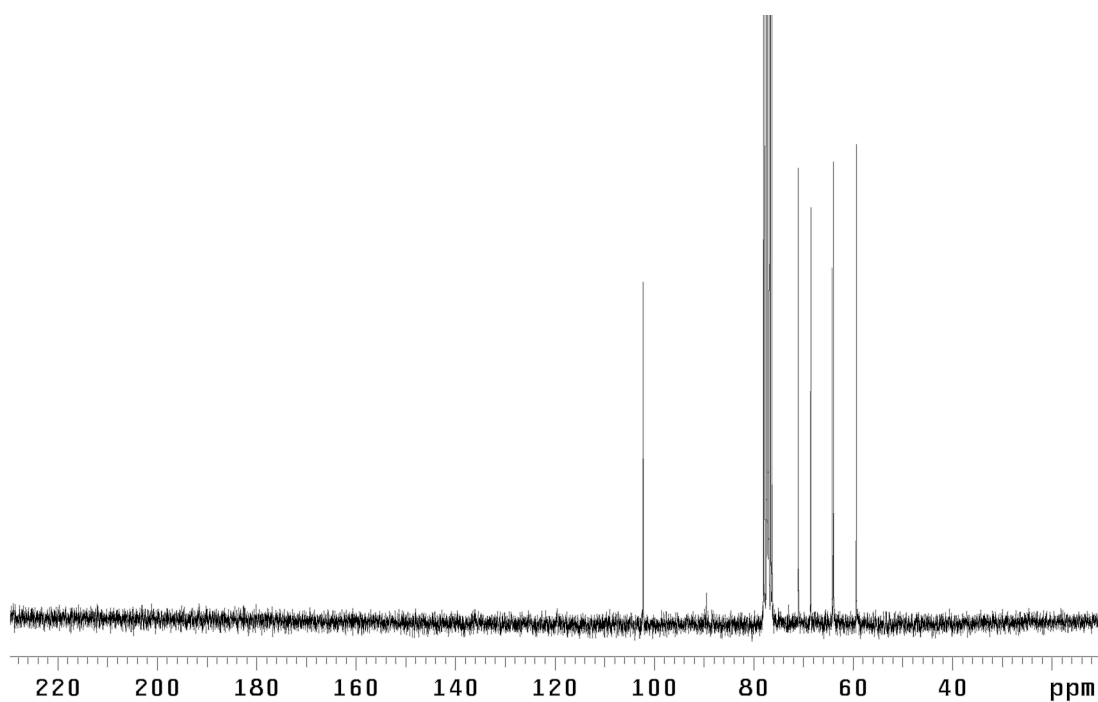
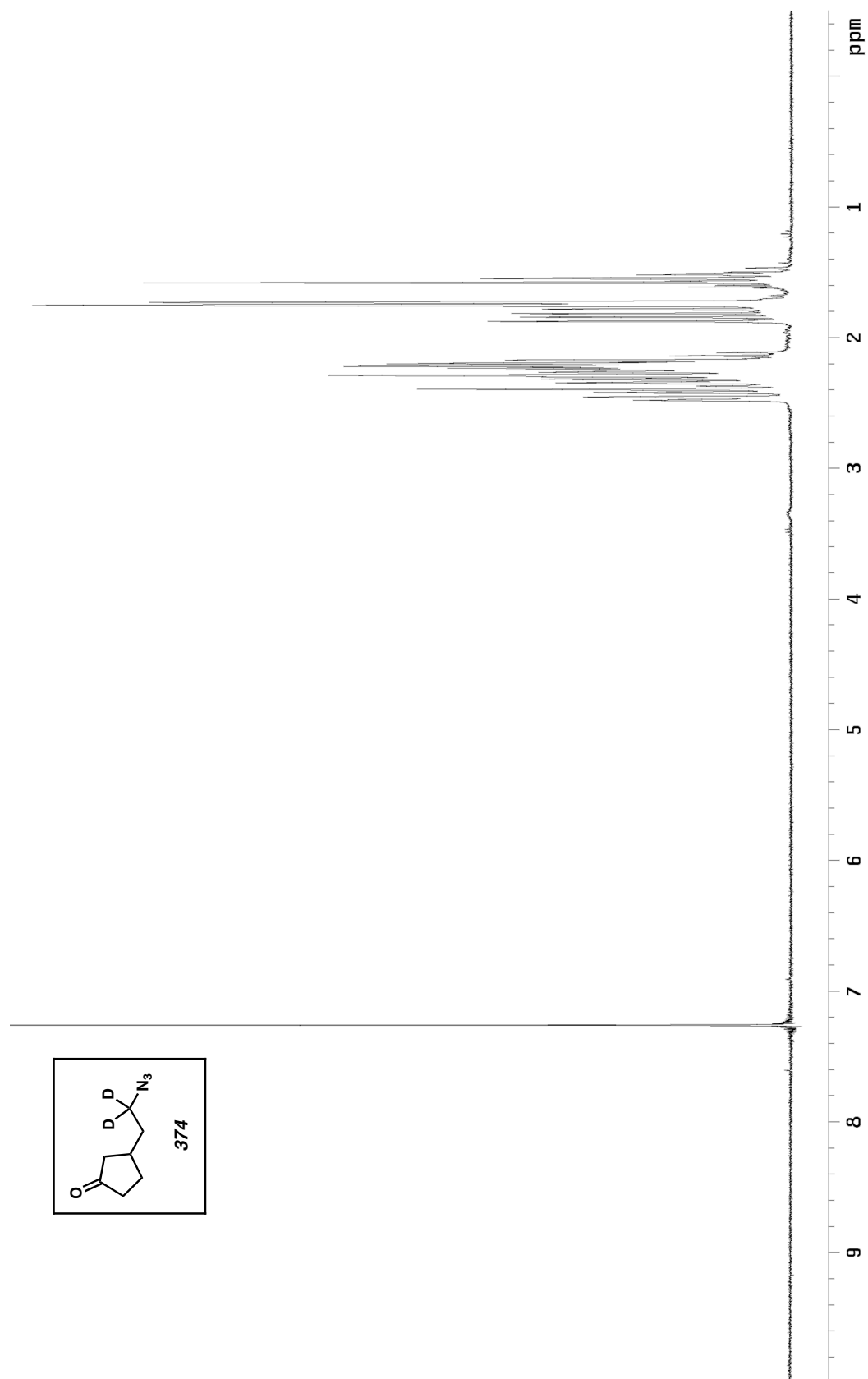


Figure A5.46. ^{13}C NMR spectrum (75 MHz, CD_3OD) of **373**.

Figure A5.47. ^1H NMR spectrum (300 MHz, CDCl_3) of **374**.

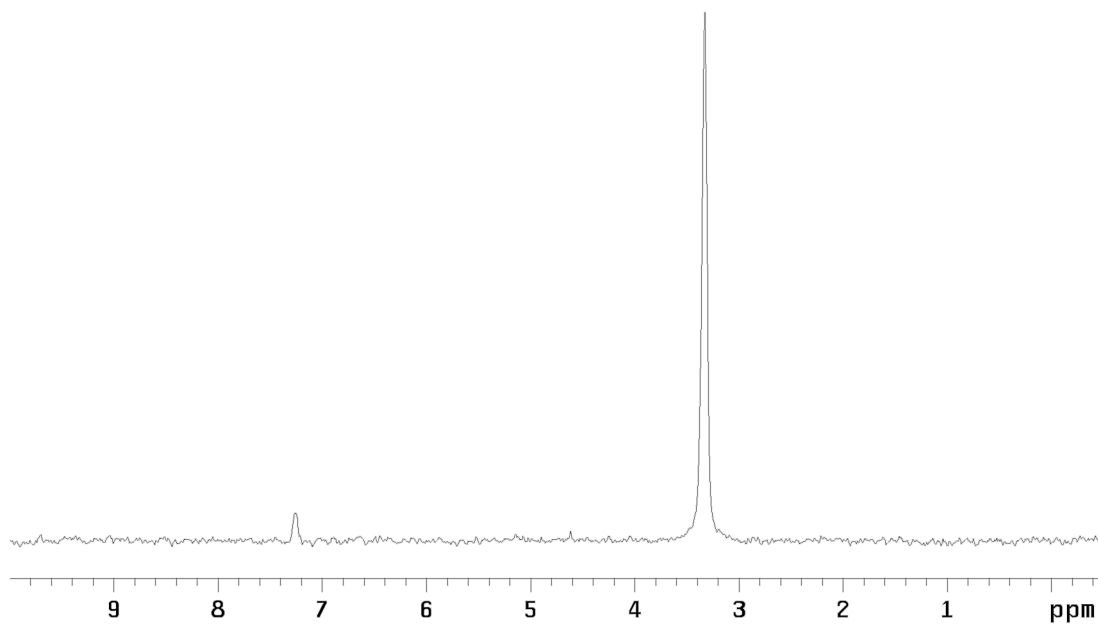


Figure A5.48. ^2H NMR spectrum (76 MHz, CHCl_3) of **374**.

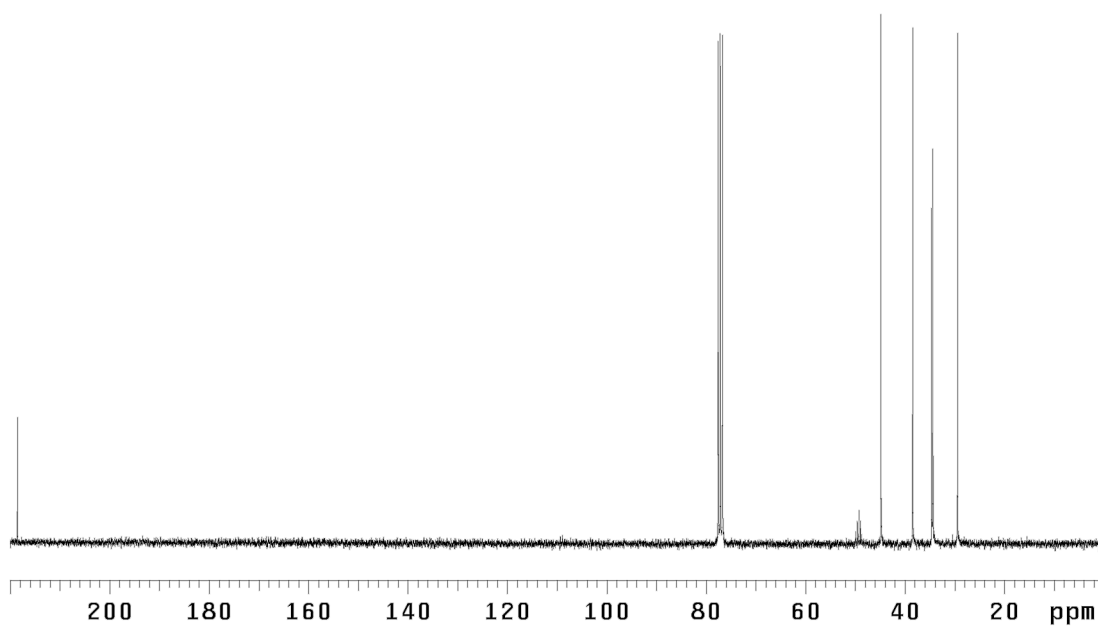


Figure A5.49. ^{13}C NMR spectrum (75 MHz, CDCl_3) of **374**.